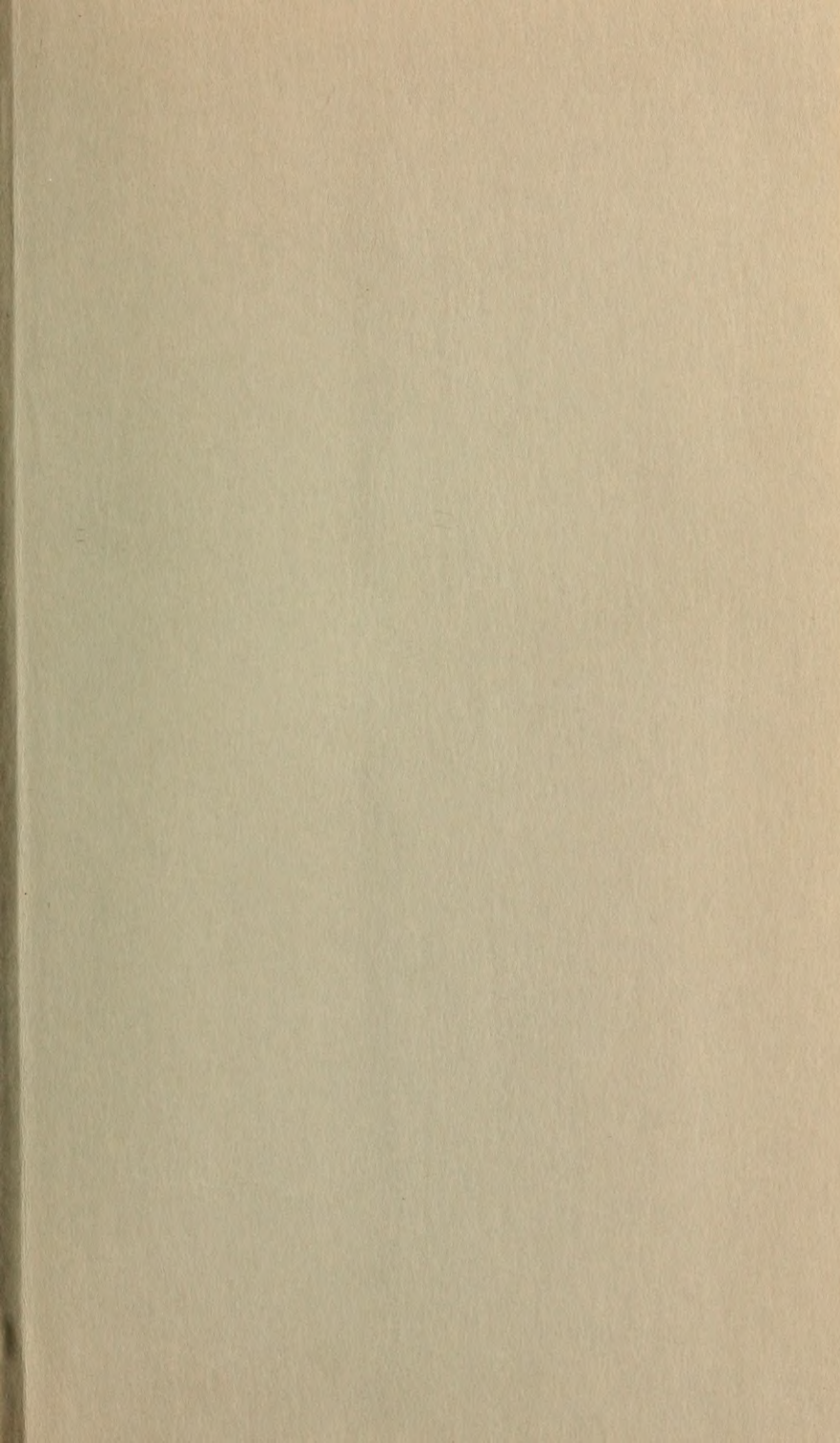


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Washington, D. C.

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE:

CONDUCTED BY

H. G. KNAGGS, M.D., F.L.S.

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R. McLACHLAN, F.L.S.

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VOL. VII.

“Wenn man so in sein Museum gebannt ist;
Und sieht die Welt kaum einen Feiertag,
Kaum durch ein Fernglas, nur von weiten,
Wie soll man sie durch Ueberredung leiten?”

Goethe.

248871

LONDON:

JOHN VAN VOORST, 1, PATERNOSTER ROW.

1870-71.

LONDON :

PRINTED BY A. NAPIER, SEYMOUR STREET, EUSTON SQUARE.



595.70542

£62

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P R E F A C E.

Seven years have elapsed since we submitted our first number to the Entomologists of this country. That this was effected with some amount of misgiving, is not to be denied. We knew that former disinterested attempts to establish purely Entomological Journals had, sooner or later, succumbed to what appeared an inevitable, and large, pecuniary loss. It is with pardonable self-congratulation, then, that we see the close of our *Seventh* Volume; and we believe that any deficiency in the collective balance-sheet of the undertaking, so far as it has gone, is likely to be eventually, if but slowly, reduced and extinguished.

We thank our supporters for so ably and successfully seconding our endeavours to furnish Entomologists with a standard serial at a moderate cost; if each of them will continue his assistance, and introduce the Magazine to the notice of his friends, we shall not fear the future.

1, Paternoster Row, London, E.C.

May, 1871.

INDEX.

INDEX TO GENERAL SUBJECTS.

	PAGE
A fact!	162
Abdominal appendages, On the importance of, in specific determination ..	43
Acanthosoma grisea, A fragment of a life-history of	53
Acidalia ochrata, Scop., a species new to our list, Occurrence in Britain of ...	138
Acridium peregrinum, a locust new to the European Fauna, Remarks on the recent migration to Britain of	1
Acronycta aceris, Early appearance of	17
„ alni at Hampstead, Capture of	41
„ menyanthesis, Note on the food-plants of	88
„ myricæ, Description of the larva of	83
Agrophila sulphuralis, at Wandsworth	86
Aleochara maculata (C. Brisout), Occurrence in Britain of... ..	136
„ new to the British list, Capture in Northumberland of a species of ...	275
Allis, Death of T. H.	90
„ 's Collection, Presentation of the late Mr.	117
Amara (Celia) from Belgium, Note on a new species of... ..	229
Andricus curator, Hartig, in Britain, On the occurrence of	39
„ „ „ On the reniform "inner" gall of	230
„ inflator, „ occurring in Britain	157
Anisotoma new to the British List, Note on two species of	180
Anticlea sinuata in South Devon	86
Argynnis Euphrosyne deceived	109
„ Lathonia and Cherocampa Celerio near Faversham in 1869, Capture of	85
„ Selene, Description of the transformations of... ..	114
Baridius, Note on æconomy of Mecinus and... ..	81
„ scolopaceus, Germ., a species new to Britain, Occurrence on the South Coast of	107
„ „ Note on British locality for	136
Bembidium quadripustulatum, Dej., Capture in Britain of	35
Bledius fuscipes, Rye, Note on... ..	10
Bombyx rubi, On the treatment of the hybernating larvæ of	143
Butalis incongruella to be henceforth called Amphibatis incongruella	16
Butterfly-collecting in Switzerland, Notes on	258
Bythinus from Great Britain, Description of a new species of... ..	33
Callidium variabile at "sugar," Capture of Opilus mollis and	156
Callimome devoniensis, Parfitt ♀, Abundance of pupæ of	60
Campotogramma fluviata, Natural history of	279
Carabidæ allied to Carabus proper, On a new genus and species of	32
„ „ Notes on, and descriptions of new species	218, 244, 266

	PAGE
Cathormiocerus, Observations on a second British species of, and on the value of that genus	149
Catocala fraxini in the Regent's Park, Occurrence of	111
Cecidomyia, Synonymic notes on some species of	39
„ dorycnii, spec. nova, and of Callinome dorycnicola, spec. nova, its parasite, A preliminary account of	76
„ terminalis, Loew, pruning the top shoots of Salix fragilis	89
Cerura vinula, Variety in the egg of	117
Ceuthorhynchus sulcicollis, Gyll., Something like reflection in	36
Chelonia caja, Variety of	143
Chesias spartiata and obliquaria, Comparative descriptions of the larvæ of ...	260
Chœreampa Celerio near Faversham in 1869, Capture of Argynnis Lathonia and...	85
„ neriî at Birmingham	41
Chrysides parasitic on Odynerus spinipes, Further notes on the æconomy of the ...	250
Cirrhiædia xerampelina at Manchester... ..	140
Cloantha solidaginis at Halifax	112
Coccinellæ, Note on the recent abundance of... ..	12
Coleoptera, Additions, &c., to the list of British... ..	205
„ Captures of	80
„ Note on a habit of certain Indian	59
„ Note on some ambiguously British species of	59
„ Note on varieties of British	36
„ Notes on Portsea	154
„ Notes on Wiltshire	229
„ at Rannoch in 1870... ..	81
„ during the past season, Captures of	136
„ from Britain, Descriptions of new species, &c., of	6
„ in Morayshire	10
„ „ North Devon, Captures of	108
„ near Lewisham, Captures of	12
„ „ Maidstone, Captures of	155, 254
„ „ Manchester	107
„ on the shores of Loch Leven	81
Coptoderides from the Amazons, On the synonymy of certain... ..	10
Cordulia metallica, Van der Lind., a Dragon-fly new to Britain, Occurrence of ...	38
Corizus Abutilon, Rossi, a species of Hemiptera-Heteroptera new to our lists, Note on the occurrence in Britain of	208
Corsican insects, Notes on some	225, 248
Corticaria new to the British lists, Note on a species of	274
Cossus ligniperda, Note on	18
Crambus fascinelinus (Pedriolellus), Description of the larva and habits of	160
Cryptocephalus Wasastjernii, Note on the food-plant of	154
Cryptophagus fumatus, Gyll., a species new to the British List, Capture in Northumberland of	35
„ Schmidtii, Note on further British examples of	229
„ Waterhousei, Rye, Note on	274
Cynipidæ, &c., Note on dimorphism of American	38
Cynips, Note on the flight of	255
„ longiventris, Hartig, a species new to the British List	108

	iii.
	PAGE
Dawson, Death of Rev. J. F.	216
Deilephila galii, Description of the larva of, with notes on its variation ...	231
" " Note on breeding ...	232
" " Some notes on the young larva of ...	187
" " at Alphington ...	85
" " " Exeter ...	61
" " " Helston ...	139
" " " Leominster ...	86
" " " Newcastle-on-Tyne ...	110
" " " Perthshire (recorded as livornica, p. 139) ...	210
" " " Stalybridge... ..	86
" " " in Fifeshire ...	139
" " " Herefordshire ...	86
" " " Suffolk ...	86
" " " near Derby ...	85
" " " Exeter ...	110
" " " Kilmarnock ...	111
" " " Perth ...	110
" " " Plymouth ...	158
" " " Stroud ...	110
livornica, Description of the larva of, with notes on variation...	99
" " at Birmingham ...	40
" " " Dartmouth ...	60
" " " Folkstone ...	40
" " " Glanville's Wootton ...	139
" " " Perthshire (error, this was galii, see p. 210) ...	139
" " " Teignmouth ...	40
" " " Waltham Abbey ...	40
" " " in Dorsetshire ...	40
" " " Gloucestershire ...	61
" " " South Wales ...	40
" " " near Exeter ...	110
" " " Kilkenny ...	61
" " " Maidstone ...	110
" " " Plymouth ...	110, 158
Depressaria granulosea, Note on ...	159
" pallorella, &c., in Sussex ...	41
Dianthœcia irregularis (echii) bred in England ...	61
Dicranura bicuspis, &c., at Leominster, Capture of ...	16
Dimorphism of American Cynipidæ, &c., Note on ...	38
Diurnal Lepidoptera from Madagascar, Descriptions of new species of ...	30
" " " Chontales, Nicaragua, and of one from Minas Geraes, Descriptions of five new species of ...	3
Donacia comari (aquatica, Wat. Cat.), Note on ...	59
Double-broods of Thyamis, Note on possible... ..	207
Drachenfels, Four days at the ...	174
" Note on galls from the ...	254
Drilus flavescens ♀, Note on ...	59
Dryops femorata near Bristol ...	230

	PAGE
Early appearance of <i>Acronycta aceris</i>	17
„ butterflies	41
Eng. What will does the term of the <i>Lepidoptera</i> afford towards determining the position of certain species?	230
„ and young larva of <i>Thecla rubi</i> , Notes on the... ..	232
<i>Elachista serricornis</i> , Capture of	188
Entomological Society of London, Proceedings of the	21, 44, 60, 164, 188, 216, 239, 263, 283
„ „ „ Haggerston, Proceedings of the	162, 237, 282
„ „ „ Newcastle-on-Tyne	238
<i>Erebia Medea</i> (Blandina), Descriptions of the transformations of	64
<i>Eros</i> , Duration of the larval state in	207
<i>Eudorea atomalis</i> at Witherslack	41
<i>Eupithecia</i> , Notes on the genus	213
„ <i>campanulata</i> , Food-plants of	143
„ <i>consignata</i> and other <i>Lepidoptera</i> at Norwich	158
„ <i>irriguata</i> , Description of the larva of	14
„ <i>togata</i> in Perthshire	158
<i>Eupœcilia Degreyana</i> , Notes on the habits and food-plants of	158
<i>Exapate gelatella</i> on <i>Rhamnus catharticus</i> , Larvæ of	188
Fen <i>Lepidoptera</i> , Stray notes on the	277
<i>Feronia</i> (<i>Phorostichus</i>) (<i>perithous</i> and <i>perithus</i>) <i>Thoms.</i> , Observations on	228
Gall-midges, Note on leaf-folding	88
Galls from the Drachenfels, Note on	254
<i>Gelechia</i> , as sub-divided by Heinemann, Remarks on the genus	165
<i>Geometer</i> , A new British	282
<i>Gonoptera libatrix</i> , Larvæ of	117
<i>Gynandrus morphus</i> as a <i>Trichopterus</i> is shown, On a singular instance of partial	19
<i>Hadena assimilis</i> , Capture of	255
<i>Halias prasinana</i> , On the sound said to be produced by	231
Haliday, Death of A. H.	60, 91
<i>Halobates</i> , Notes on the Hemipterous genus	208
Haward, Death of Alfred	66
Hemiptera, Descriptions of two species of, new to the British lists, and notice of a third... ..	156
„ -Heteroptera during 1869 and 1870, Notes on captures of	184
„ -Homoptera, On certain British... ..	22, 67, 118, 146, 190, 240, 270
<i>Hepialus velleda</i> , Descriptions of the transformations of	84
„ „ near Maidenhead	61
Hesperidæ in the collection of the British Museum, The genera of	55, 92
„ „ Remarks upon the classification of the	265
<i>Homalota alga</i> , Hardy, Note on	186
<i>Humalium brevicorne</i> , Fr., and <i>H. gracilicorne</i> , Fenn., Observations on	153
„ <i>Heerii</i> , Observations on	153
<i>Hymenoptera tubulata</i> , Difficulty of rearing <i>Opius fumidus</i> and	257
„ <i>saxicola</i> , Vaughan, Note on the food-plant of	160, 231
Horton, Death of Rev. Edward	215
Hibernating larvæ, Effect of the past winter upon	17
„ „ of <i>Bombyx rubi</i> , On the treatment of the	143

	v.
	PAGE
Hybernation of tree-feeding Lepidopterous larvæ, On the	276
Hydnobius Perrisii near Gateshead-on-Tyne, Capture of	275
Hydrochus parumöculatus of Hardy, Note on the	35
Hydroporus, Alterations in nomenclature of	205
Hypsipetes impluviata, Description of the larva of	42
Indian Coleoptera, Note on a habit of certain	59
Insects from the neighbourhood of the Cheviot Hills. On a collection of	182
„ of Strathglass, Inverness-shire, Notes on the	45
Jumping May-buds	252
Lacordaire, Death of Professor	89
Lamproplax Sharpi, D. & S., Capture of, in the South of England	157
Larva and habits of Crambus fascinelinus (Pediolellus), Description of the	160
„ of Acronycta myricæ, Description of the	83
„ „ Deilephila galii, Description of the, with notes on its variation	123
„ „ „ „ Some notes on the young... .. .	187
„ „ „ „ livornica, Description (with notes on variation) of the	99
„ „ Eupithecia irriguata, Description of the	14
„ „ Hypsipetes impluviata, Description of the	42
„ „ Miana arcuosa, Description of the	260
„ „ „ „ Note on the	88
„ „ Pempelia formosa, Description of the	14
„ „ Scoparia muralis, Description of the	13
„ „ Thecla rubi, Notes on the egg and young	232
„ „ Tipula oleracea, Linn. (crane-fly), injurious to Rye-grass, The	60
„ „ Vanessa Antiopa	109
Larvæ of Bombyx rubi, On the treatment of the hybernating... .. .	143
„ „ Chesias spartiata and obliquaria, Comparative descriptions of the	280
„ „ Exapate gelatella on Rhamnus catharticus	188
„ „ Gonoptera libatrix	117
Latrodectus malmignatus, Walck., Note on	236
Leaf-folding gall-midges, Note on	88
Lederer, Death of Julius	19
Lemiodes pulveralis, Capture of	86
„ „ and other Lepidoptera at Ranworth	111
Lepidoptera. Captures of, near Battle during 1870, arranged chronologically	214
„ „ „ „ Lewes „ „ „	213
„ „ „ „ at Deal	137
„ „ at Guestling in 1870	277
„ „ „ „ Ranworth, Lemiodes pulveralis and other	111
„ „ „ „ Southport, Captures of larvæ of	17
„ „ „ „ Witherslack, Captures of... .. .	62. 63
„ „ „ „ in 1870, Captures of	87
„ „ „ „ Carmarthenshire, Captures of	233
„ „ „ „ Fen, Stray notes on the	277
„ „ „ „ near Bury St. Edmunds, Captures of	162
„ „ „ „ Huddersfield, &c., Captures of	234
„ „ „ „ Norwich, Captures of	235
„ „ „ „ Perth in 1870, Captures of	140
„ „ „ „ York, Captures, &c., of	161, 256
„ „ „ „ of Braemar, Notes on the	113

	PAGE
(Lepidoptera of) Brandon, Notes on the ...	197
,, ,, Humphrey Head and other localities in Lancashire, Note on the ...	87
,, Spring, at Leominster	277
<i>Leucania albipuncta</i> at Folkstone	87, 111
,, ,, Captures of several examples of	139
,, <i>vitellina</i> at Torquay	212
<i>Luperina cæspitis</i> at Eltham	158
<i>Lycæna Alexis</i> deceived	61
,, <i>Alsus</i> , Transformations of	186
<i>Mantispa</i> , On the metamorphoses of	77
May-buds, Jumping	282
<i>Mecinus</i> and <i>Baridius</i> , Note on the œconomy of... ..	81
<i>Meligethes</i> , Notes on	156
<i>Melissoblaptes cephalonica</i> in London	112
<i>Melœ</i> new to Britain, Occurrence near Cirencester of a species of... ..	149
<i>Miana arcuosa</i> , Description of the larva of	260
,, ,, Note on the larva of	88
Migration to Britain of <i>Acridium peregrinum</i> , a locust new to the European	
Fauna, Remarks on the recent	1
,, of White Butterflies... ..	18
<i>Mimæseoptilus aridus</i> , Note on	88
Moth-trap, without the aid of light, A new	276
<i>Neuroterus ostreus</i> , Hartig, Occurrence in Britain of	209
<i>Noctua baja</i> paired with <i>Leucania pallens</i>	88
,, <i>sobrina</i> , Capture of	277
Noctuidæ in Morayshire in 1870, Notes on captures of	140
<i>Nonagri elymi</i> at South Shields, Occurrence of	112
Northumberland and Durham, A Catalogue of the Insects of (Revision of Coleop- tera, by T. J. Bold): Review	237
<i>Nothris verbascella</i> , Notes on	160
<i>Notodonta trilophus</i> near Exeter, Suspected occurrence of	113
Oak-gall, Note on an	210
<i>Odynerus spinipes</i> , Further note on the œconomy of <i>Chrysides</i> parasitic on... ..	250
<i>Oncomera femorata</i> at Silverdale, near Lancaster	182
<i>Opadia funebrana</i> , Difficulty of rearing, and <i>Homœosoma nebulella</i>	257
<i>Opilus mollis</i> and <i>Callidium variabile</i> at "sugar," Capture of	156
<i>Orgyia antiqua</i> male attracted by female <i>O. gonostigma</i>	117
Packard's Guide to the Study of Insects: Review	20
<i>Pempelia formosa</i> , Description of the larva of	14
,, <i>obductella</i> , F. R., a species new to Britain, Occurrence of	85
<i>Peronea comariana</i> , <i>proteana</i> , and <i>potentillana</i> , Notes on	233
,, <i>potentillana</i> , Cooke (<i>comariana</i> , Zeller?), Note on	41
Perthshire Society of Natural Science for Session 1869-70, Proceedings of the: Review	214
<i>Philonthus xantholoma</i> , On a variety of	181
Phycidæ, Descriptions of three new species of (from Britain), new to science ...	130
Phytophaga, Note on the earlier stages of Scotch	108

	vii.
	PAGE
Phytoptus, A correction concerning the genus	144
Pieris brassicæ, Late larvæ of	185
„ Daphidice in Epping Forest, Occurrence of	109
Pissodes piniphilus at Sunderland, Capture of	275
Platyichirus, On the British species of... ..	127
Platypus cylindrus, Fab., On the habits of	103, 132
Platysamia Cecropia, Linn., Note on	81
Plusia acuta, Walker, Capture in Britain of	138
„ ni at Penzance, Occurrence of	188
Polyommatus phlœas, Variety of	110
Ptenidium intermedium, Wankowicz, Note on	152
„ new to the British list, Note on a species of	152
Ptilophora plumigera, Life-history of	210
Scoparia basistrigalis near York, Occurrence of	86
„ muralis, Description of the larva of	13
„ Zelleri and Sesia ichneumoniformis at Wolverton	86
Scottish Naturalist and Journal of the Perthshire Society of Natural History ; edited by Dr. Buchanan White: Review	215
Scydmanus (Eumicrus) rufus, Müll. & Kunze, a species new to the British lists, Note on	273
Second broods in single-brooded Lepidoptera, Notes on occasional	18
Sesia ichneumoniformis at Wolverton, Scoparia Zelleri and	86
„ philanthiformis in Scotland	41
Sialis in Chili, On the occurrence of the Neuropterous genus... ..	145
Smerinthus ocellatus in pupa two years	61
„ populi, Abnormal appearance of	232
Sound said to be produced by Halias prasinana, On the	231
Sphinx convolvuli, Notes on	139
Staphylinidæ, Description of a new genus and species of (from South Australia)	217
Staudinger's visit to England, Postponement of Dr.	66
Stenocephalus agilis in South Wales	157
Strophosomus hirtus, Schön., Walt., Capture of	37
Synonymic notes on some species of Cecidomyia	39
“Synopsis Coleopterorum Europæ et confinium anno 1868 descriptorum,” by G. R. Crotch, M.A.: Review	236
Syrphidæ, Additions and corrections to the list of British, with a description of one species new to science	200
Tapinostola elymi at Cleethorpes	140
Teichobia Verhuellevella feeding on Asplenium trichomanes	235
“The Fly,” and “The Flea”	36
“The Honey Bee,” its natural history, physiology, and management, by Dr. Bevan ; revised, enlarged, and illustrated by W. A. Munn, F.R.H.S., &c.: Review	262
Thecla rubi, Notes on the egg and young larva of	232
Thomson's “Opuscula Entomologica,” Fasc. i and ii, Analysis of	204
Thyamis, Note on possible double broods of	207
Tipula oleracea, Linn. (crane-fly), injurious to Rye-grass, The larva of	60
Tomicus bicolor, Hbst., Capture in Britain of	107
Tortrix new to Britain, Capture of a	255

	PAGE
Trachyphloeus myrmecophilus, Seidlitz, Note on the occurrence in Britain of, with observations on a second British species of Cathormiocerus, and on the value of that genus	149
"Transactions of the Norfolk and Norwich Naturalists' Society, 1869—70 : " Review	21
Transformations of Argynnis Selene, Description of the	114
" " Hepialus velleda, Description of the	84
" " Lycæna Alsus	186
Tree-feeding Lepidopterous larvæ, On the hybernation of	276
Trichoptera of Zetterstedt's "Insecta Lapronica," in connection with the nomenclature of British species, note on	281
Triphæna subsequa in Gloucestershire	212
Triplax Lacordairii at Darenth Wood, Re-occurrence of	38
Trogophlæus bilineatus, Steph., Note on	81
" foveolatus, Sahlb., Note on	153, 182
Vanessa Antiopa, Larva of	109
" " in Suffolk, Capture of	139
" " near Rochester, Capture of	109
Varieties of British Coleoptera, Note on	36
Variety in the egg of Cerura vinula	117
" of Chelonia caja	143
" " Philonthus xantholoma, On a	181
" " Polyommatus phlæas	110
"Verzeichniss der Schmetterlinge der Umgegend von Halle an der Saale," by A. Stange : Review	144
Windermere, A day at	62
Wing-nerves, Note on the nomenclature of, and on the importance of the abdominal appendages in specific determination	43
Xylina conformis, Further specimens of	188
" Zinckenii at Darenth, Capture of	140
Xylomyges conspiciellaris in Worcestershire	17
Yarmouth Denes, Under the sand on	63

INDEX OF SUBJECTS NOTICED IN THE PROCEEDINGS OF THE ENTOMOLOGICAL SOCIETY OF LONDON.

	PAGE
Acari on pear-trees	67
Acidalia strigaria	189
Ægosoma scabricorne, Larvæ of	189
Amazons, Cerambycidae of the	67, 164
Anniversary Meeting	239
Anobium paniceum eating Cayenne-pepper	164
Apteroicyclus honoluluensis from the Sandwich Islands	283
Argynnis Niobe and Adippe, Identity or distinctness of	44
Arrangement of Macro-Lepidoptera	283
Asilus feeding upon grasshoppers	189
Ateuchus semipunctatus, Living specimen of	44
Atlantic Coleoptera, Additions to	283
Bombyx Cynthia and Yama-Mai, Hybrid between	263
" Mori with larval head	263
British Lepidoptera, Varieties of	216
Butterflies from Ecuador... ..	21
" " Kinsembo	67
" " Madagascar	264
" " Nature-printed	66
" " of Basuto Land	194
Calopterygidae, New species of	21
Caradrina cubicularis and Senta ulvæ in copula	164
Chinese Lepidoptera... ..	21
Chlorops lineata at Cambridge	164, 283
Coccus on Cypridium	239
" " Lemons	239
Coleoptera, Genera of, studied chronologically	44
" " New species of British	189
Copridæ, New species of	21
Corixa destructive to ova of fishes in India	239
Curculionidæ, New species of Australian	21, 164
Cynipidæ, Galls of	164, 189
Deilephila galii and livornica, Figures of larvæ of	164
Dianthœcia, British species of	66
Dispersal of insects by atmospheric agencies	264
Ephemeridæ, Monograph of the	189
Eresus ctenizoides, Living specimen of, from Greece	189
Fumea reticella, and cases	189
Galls from Morocco	239
" on Ammophila arundinacea	67
" " Campanula rotundifolium	264

	PAGE
(Galls on) <i>Carex</i>	283
„ „ <i>Juniper</i>	44
Gynandromorphism in Aculeate Hymenoptera	283
„ „ <i>Brachycentrus subnubilus</i>	44
Hemiptera-Heteroptera, New species of British	189
Honey-Bee, Habits of	44
Hornet barking ash-branches	264
Hymenoptera from Egypt	67
„ „ Japan	21
Immature sexuality in insects	264
Kinsembo, Insects from	44
Larvæ, Relationship between colour and edibility in	67
Lepidoptera from Fantee	216
„ „ Perthshire	239
„ „ Malformations in antennæ of	264
„ „ New species of diurnal	216
Lepisma, Habits of	283
Leucania albipuncta from Folkestone	164
Longicornia from North India	189
Macrotoma heros	164
Melœ maialis impaled upon Opuntia	164
„ rugosus from Essex	164
Mimicry in spiders and caterpillars	67
Natal, Insects from	144
Nonagria brevilinea from Horning Fen	164
Observatory Hives, First notice of	264
Oxypoda, British species of	264
Oxyptilus latus from Norfolk	66
Oxytelus fulvipes, new to Britain... .. .	239
Parasites on birds, Eggs of	239
„ „ peacock	264
Phlœotribus oleæ from Halifax	189
Phora in wasps' nests... .. .	189
Phycis obductella	189
Pierinæ, New species of	239
Pipiza noctiluca, Substance adhering to head of	283
Plusia interrogationis in Sussex	216
Rhynchium brunneum obliterating inscriptions in Egypt	264
Sagra, Habits of	67
Tangiers, Insects from	67
Trachyphlœus laticollis, new to Britain	21

SPECIAL INDEX.

COLEOPTERA.

	PAGE
<i>Abaris notiophiloides</i>	220
<i>picipes</i>	219
<i>robusta</i>	219
<i>striolata</i>	220
<i>tachypoides</i>	220
<i>Agabus Solieri</i>	52
<i>Aleochara cuniculorum</i>	155
<i>maculata</i>	136
<i>ruficornis</i> , ♂	80
<i>villosa</i> (?)	275
<i>Amara indivisa</i>	229
<i>Anchomenus versutus</i> (var. <i>lugubris</i> , Dufts.)	36
<i>Anisotoma ciliaris</i>	154
<i>similata</i>	8
<i>Anisoxya fuscula</i>	137
<i>Anobium denticolle</i>	137
<i>Aspidophorus orbiculatus</i>	80
<i>Athous undulatus</i>	81
<i>Bagous inceratus</i>	154
<i>lutulosus</i>	154
<i>Baridius laticollis</i>	81
<i>scolopaceus</i>	107, 136
<i>Bembidium anglicanum</i>	12
<i>obliquum</i>	155
<i>4-pustulatum</i>	35
<i>Sturmii</i>	155
<i>Bledius fuscipes</i>	10
<i>Bolitobius inclinans</i>	107
<i>Brachonyx indigena</i>	10
<i>Bythinus glabratus</i>	33
<i>Callidium variabile</i> at sugar	156
<i>Calophæna viridipennis</i>	221
<i>Carida flexuosa</i>	81
<i>Cassida hemisphærica</i>	137
<i>sanguinolenta</i> (unicolorous var.)	137
<i>Cathaicus</i> , g. n.	32
<i>Swinhoei</i>	33
<i>Cathormiocerus</i> , Observations on....	151
<i>Ceuthorhynchideus frontalis</i>	136

	PAGE
<i>Ceuthorhynchus punctiger</i>	107
<i>sulcicollis</i> , Reflection (?) in	36
<i>vicinus</i> , Bris. (= tri- angulum, Märk.)...	36
<i>Choleva longula</i>	183
<i>Coccinella 16-guttata</i> , Transforma- tions of	108
<i>Colon denticulatum</i>	9
<i>Conopalpus Vigorsii</i>	80
<i>Copterides</i> , Synonymy of certain Amazonian	10
<i>Corticaria obscura</i> (?)	274
<i>Corylophus sublævipennis</i>	155
<i>Cryptocephalus 10-punctatus</i>	80
<i>punctiger</i>	80
<i>querceti</i>	80
<i>Wasastjernii</i>	154
<i>Cryptophagus fumatus</i>	35
<i>Schmidtii</i>	206
<i>validus</i>	9
<i>Waterhousei</i>	275
<i>Ctenodactyla depressa</i>	222
<i>foveata</i>	221
<i>glabrata</i>	221
<i>Dasytes oculatus</i>	206
<i>Donacia comari</i>	59
<i>Drilus flavescens</i> , ♀	59
<i>Dyschirius angustatus</i>	154
<i>Dytiscus lapponicus</i>	52
<i>Epuræa neglecta</i>	11
<i>Eros affinis</i> , Larval state of	207
<i>Euplectus ambiguus</i>	12
<i>Feronia puncticeps</i> and <i>pauciseta</i> ..	228
<i>Gymnusa brevicollis</i>	11, 107
<i>Haliplus mucronatus</i>	137
<i>Helluomorpha glabrata</i>	223
<i>Janus</i>	223
<i>linearis</i>	224
<i>oculea</i>	223
<i>subrostrata</i>	224

	PAGE		PAGE
<i>Homalium brevicorne</i>	153, 183	<i>Pachyrinus 4-nodosus</i>	12
<i>gracilicorne</i>	153	<i>Pediacus depressus</i>	205
<i>Heerii</i>	152	<i>Pericompsus grossepunctatus</i>	245
<i>Homalota algæ</i>	106	<i>immaculatus</i>	246
<i>crassicornis</i>	107	<i>incisus</i>	246
<i>Sharpi</i>	6	<i>metallicus</i>	217
<i>subtilissima</i>	12	<i>picticornis</i>	245
<i>sylvicola</i>	107	<i>simplex</i>	246
<i>Hynobius Perrisii</i>	275	<i>Philonthus cicatricosus</i>	155
<i>Hydrobius fuscipes</i> (var. <i>chalconotus</i> , Leach; <i>æneus</i> , Sol.)	36	<i>xantholoma</i> (var.)	181
(var. <i>subrotundus</i> , Steph. ?)	36	<i>Phlæophilus Edwardsii</i>	254
<i>Hydroporus</i> , Changes in nomencla- ture of	205	<i>Phratora cavifrons</i>	52
<i>griseostriatus</i>	52	<i>Phyllotreta sinuata</i>	137
<i>incognitus</i>	52	<i>Phytæcia cylindrica</i>	136
<i>unistriatus</i>	154	<i>Pissodes notatus</i> near Manchester ..	80
<i>Hyperaspis reppensis</i> at Rannoch ..	81	<i>piniphilus</i>	275
<i>Læmophlæus bimaculatus</i>	155	<i>Platypus cylindrus</i> , On the habits of	103, 132
<i>pusillus</i>	205	<i>Plegoderus dissectus</i>	80
<i>Larinus ebenus</i>	230	<i>Pleuracanthus ebeninus</i>	224
<i>Lathridius consimilis</i> (?)	80	<i>Prionocyphon serricornis</i>	80
<i>testaceus</i>	80	<i>Pselaphus dresdensis</i>	230
<i>Leptotrachelus bifasciatus</i>	222	<i>Psylliodes attenuatus</i> (the 'Hop flea') ..	36
<i>cruciatus</i>	222	<i>Ptenidium intermedium</i> (Vankoviezii, Matth.)	152
<i>Liotachys</i> , g. n.	267	<i>Pyrochroa pectinicornis</i>	52
<i>antennatus</i>	268	<i>Saprinus punctulatus</i>	108
<i>Macronychus</i> (?) <i>parumoculatus</i>	35	<i>Sartallus</i> , g. n.	217
<i>Malthodes misellus</i>	107	<i>signatus</i>	217
<i>Mecinus circulator</i>	154	<i>Scolytus Ratzeburgii</i>	81
<i>collaris</i>	81	<i>Scraptia fuscula</i>	80
<i>Megapenthes tibialis</i>	137	<i>Seydmænus rufus</i>	273
<i>Meligethes</i> , Notes on	156	<i>Sibynia sodalis</i>	154
<i>Melœ decorus</i> (?)	149	<i>Silpha dispar</i>	81
<i>Mordella fasciata</i>	156	<i>Simplocaria metallica</i>	59
<i>Mordellistena pusilla</i>	136	<i>Sphærites glabratus</i>	183
<i>Mycetophagus fulvicollis</i>	81	<i>Sphindus dubius</i>	80
<i>Mycetoporus lucidus</i>	12, 155	<i>Stenostola ferrea</i> at Portsea	155
<i>Oncomera femorata</i> in Lancashire ..	182	<i>Stenus brevicollis</i>	183, 184
near Bristol	230	<i>oscillator</i>	7
<i>Opilus mollis</i> at sugar	156	<i>Strophosomus hirtus</i> (= <i>Platytarsus</i> <i>setulosus</i>)	37
<i>Orchestes scutellaris</i>	108	<i>Tachys æneopiceus</i>	268
<i>Oxygnoptilus cuspidatus</i>	154	<i>dromioides</i>	269
<i>Oxypoda rupicola</i>	183	<i>fraterculus</i>	268
		<i>platyderus</i>	268

	PAGE
(Tachys) Squiresi	269
sulcipennis.....	269
Tefflus Hamiltonii	244
Thinobius longipennis	12
Thyamis (? double-brooded).....	207
cerina	207
rutila	206
Tomicus bicolor	107
Trachyphloeus myrmecophilus.....	149
Trichopteryx punctatissima.....	59
subænea	59
Trimium brevipenne	207
Triplax Lácordairii.....	38
Trogophloeus bilineatus, Note on synonymy of. 181,	205
foveolatus	153, 182
spinicollis	8
Xantholinus distans	9
Xystosomus elaphrinus.....	267
Grutii.....	248
hilaris	266
ovatulus.....	247
sculpticollis	266
strigosus	248
Zeugophora Turneri	52

DIPTERA.

Cecidomyia dorycnii	76
floricola	40
millefolii.....	39
terminalis	89
veronicæ.....	39
Chilosia longula	202
nebulosa	201
Didea alneti.....	200
Eumerus litoralis (= sabulonum) ..	203
Helophilus frutetorum	202
Melanostoma barbifrons	201
Orthoneura brevicornis	203
Pelecocera tricineta	200
Pipiza vana (= noctiluca, ♂)	203

	PAGE
Platychirus albimanus	128
angustatus	129
clypeatus	128
fulviventris.....	129
immarginatus	129
manicatus	127
melanopsis	127
peltatus	128
podagratus.....	129
scambus	129
scutatus	128
Plocota apiformis	203
Syrphus cinctus (?)	201
seleniticus	200
venustus	201
Tipula oleracea	60
Xylota abiens	202
florum	203

HEMIPTERA-HETEROPTERA.

Acanthosoma grisea	53
Corizus Abutilon.....	208
Hadrodema pinastri	156
Halobates, Notes on	208
Lamproplax Sharpi at Wimbledon ..	157
Plociomerus luridus	156
Psallus (?) argyrotrichus	52
Whitei	52
Salda arenicola	157
Stenocephalus agilis	157

HEMIPTERA-HOMOPTERA.

Achorotile albosignata	195
Aphrophora alni.....	271
salicis.....	272
Asiraca clavicornis	24
Cixius brachycranus	121, 148
contaminatus	121, 160
cunicularius	121, 122
intermedius	121, 147

	PAGE
(Cixius) <i>nervosus</i>	121, 146
<i>similis</i>	121, 192
<i>simplex</i>	121, 191
<i>stigmaticus</i>	122, 191
<i>Delphax pulchella</i>	24
<i>Dicranotropis hamata</i>	73
<i>Lepyronia coleoptrata</i>	270
<i>Liburnia adela</i>	26
<i>albofimbriata</i>	27
<i>Boldi</i>	26, 68
<i>capnodes</i>	26, 69
<i>cognata</i>	28
<i>collina</i>	26
<i>Dalei</i>	28, 72
<i>denticauda</i>	28
<i>discolor</i>	27
<i>distincta</i>	26, 53
<i>Douglasi</i>	29, 72
<i>elegantula</i>	26
<i>exigua</i>	28
<i>extrusa</i>	194
<i>Fieberi</i>	27, 70
<i>forcipata</i>	27
<i>fuscovittata</i>	25
<i>guttula</i>	25
<i>leptosoma</i>	27
<i>limbata</i>	29
<i>lineata</i>	29
<i>lineola</i>	25
<i>longipennis</i>	25
<i>lugubrina</i>	28
<i>melanopachys</i>	26, 70
<i>mesomelas</i>	29
<i>neglecta</i>	27
<i>niveimarginata</i>	27, 71
<i>notula</i>	25
<i>obs curella</i>	28
<i>pallidula</i>	193
<i>pellucida</i>	27
<i>pullula</i>	28
<i>Scotti</i>	25, 67
<i>Signoreti</i>	26, 69
<i>smaragdula</i>	25
<i>sordidula</i>	26
<i>speciosa</i>	27

	PAGE
(Liburnia) striatella	27
uncinata	28
unicolor	25
venosa	26
<i>Oliarus leporinus</i>	120
pallidus	119
<i>Ptyelus campestris</i>	242, 243
exclamationis	242
lineatus	242
spumarius	242
<i>Stiroma affinis</i>	73
albomarginata	74
moesta	74
nasalis	73
pteridis	73
<i>Ulopa trivia</i>	272
obtecta.....	272

HYMENOPTERA.

<i>Andricus curvator</i>	39
<i>inflator</i>	157
<i>Callimome devonensis</i>	60
<i>dorynicola</i>	77
<i>Chrysis neglecta</i> , Economy of.....	250
<i>Cynipidæ</i> , On dimorphism of American	38
<i>Cynips</i> , Flight of	255
<i>longiventris</i>	108
<i>Neuroterus ostreus</i>	209

LEPIDOPTERA.

<i>Acidalia ochrata</i>	138
<i>rubricata</i>	158, 162, 200
<i>Acronycta aceris</i>	17
<i>alni</i>	41
<i>menyanthedis</i>	88
<i>myricæ</i>	49
„ , Larva of	83
<i>Agrophila sulphuralis</i>	86, 162, 200
<i>Agrotis agathina</i>	141
<i>præcox</i>	141
<i>Aleucis pictaria</i>	41

	PAGE
<i>Amphisbatis incongruella</i>	15
<i>Anerastia lotella</i>	64, 197
<i>Anticlea sinuata</i>	86, 162
<i>Aporophila australis</i>	138
<i>Argynnis Euphrosyne</i>	109
<i>Lathonia</i>	85
<i>Selene</i> , Larva of	114
<i>Aricoris Cleomedes</i>	4
<i>Batrachedra pinicolella</i>	235
<i>Boarmia ruboraria</i> , Error as to... ..	277
<i>Bombyx callunæ</i>	17
<i>rubi</i> , Larva of	143
<i>Butalis incongruella</i>	15
<i>Scopolella</i>	175
<i>Campotogramma fluviata</i>	279
<i>Catocala fraxini</i>	111
<i>Catoptria aspidiscana</i>	62
<i>Cerigo Cytherea</i>	141
<i>Cerostoma persicella</i>	177
<i>Cerura vinula</i>	117
<i>Chelonia caja</i> , Variety of	143
<i>Chesias obliquaria</i>	86, 140, 162
,, , Larva of	260
<i>spartiata</i> , Larva of	260
<i>Chærocampa Celerio</i>	85
<i>nerii</i>	41
<i>porcellus</i>	63
<i>Cirrhædia xerampelina</i>	140
<i>Cloantha solidaginis</i>	112, 140
<i>Coleophora salinella</i>	87
<i>therinella</i>	237
<i>Cossus ligniperda</i>	18
<i>Crambus fascelinellus</i>	64
(<i>Pedriolellus</i>), Larva of... ..	160
<i>margaritellus</i>	51
<i>Crymodes exulis</i>	49, 255
<i>Dasydia obfuscata</i>	48, 140
<i>Dasyptolia Templi</i>	235
<i>Deilephila galii</i> .. 61, 85, 86, 110, 111, 123,	
139, 158, 187, 210, 213, 232	
,, , Larva of	123, 187
<i>livornica</i> .. 40, 60, 61, 99, 110,	
139, 158, 233	
,, , Larva of	99
<i>Depressaria carduella</i>	63

	PAGE
<i>(Depressaria) ciniflonella</i>	51
<i>granulosella</i>	159
<i>pallorella</i>	41
<i>Dianthœcia Barrettii</i>	77
<i>cæsia</i>	88
<i>echii bred</i>	61
<i>irregularis</i>	162
<i>Diasemia literalis</i>	234
<i>Dicranura bicuspis</i>	16
<i>Dicrorampha flavidorsana</i>	87
<i>Elachista serricornis</i>	188
<i>triseriatella</i>	87
<i>Emesis Lacrines</i>	5
<i>Endromis versicolora</i>	140
<i>Ennomos tiliaria</i>	48
<i>Erebia Medea</i> (<i>Blandina</i>), Larva of..	64
<i>Eucosmia undulata</i>	87
<i>Eudorea atomalis</i>	41
<i>Euperia fulvago</i>	50, 142
<i>Eupithecia campanulata</i>	143
<i>consignata</i>	16, 158, 163
<i>irriguata</i>	16
,, , Larva of	14
<i>togata</i>	158
<i>Eupæcilia ambiguella</i>	177
<i>anthemidana</i>	200
<i>citrella</i>	51
<i>curvistrigana</i>	87
<i>Degreyana</i>	158
<i>griseana</i>	112
<i>Exapate gelatella</i> , Larva of	188
<i>Gluphisia crenata</i>	87
<i>Glyphipteryx Bergstræssella</i>	177, 178
<i>Gonoptera libatrix</i> , Larvæ of	117
<i>Hadena assimilis</i>	255
<i>Halias prasinana</i>	231
<i>Heliothis marginata</i>	88, 139, 140, 142
<i>Hepialus velleda</i>	61
,, , Larva of	84
<i>Homœosoma nebulælla</i>	257
<i>saxicola</i>	132, 160, 231
<i>senecionis</i>	131
<i>Hydrænomia Oreinus</i>	58
<i>Hypsipetes impluviata</i> , Larva of... ..	42

<i>Lemiodes pulveralis</i>	86, 111
<i>Lemonias Lasthenes</i>	5
<i>Leucania albipuncta</i>	87, 111, 139
<i>pallens</i>	88
<i>putrescens</i>	234
<i>vitellina</i>	212
<i>Lithocolletis Amyotella</i>	62
<i>Lithosia griseola</i>	17
<i>stramineola</i>	17
<i>Lithostege griseata</i>	162, 200
<i>Luperina cæspitis</i>	158
<i>Lycæna Alexis</i>	61
<i>Alsus</i> , Larva of	186
<i>Lythria purpuraria</i>	162
<i>Melissoblastes cephalonica</i>	112
<i>Miana arcuosa</i> , Larva of	86, 260
<i>Micropteryx mansuetella</i>	62
<i>Mimæseoptilus aridus</i>	88
<i>Necyria Beltiana</i>	3
<i>Nemoria viridata</i>	62, 63
<i>Nepticula betulicola</i>	51
<i>Noctua baja</i>	88
<i>depuncta</i>	140, 141
<i>sobrina</i>	277
<i>Nonagria elymi</i>	112, 140
<i>Nothris verbascella</i>	160
<i>Notodonta trilophus</i>	113
<i>Nymphidium Ethelinda</i>	6
<i>Nyssia lapponaria</i>	282
<i>Œcophora grandis</i>	178
<i>Lambdella</i>	87, 175
<i>Opadia funebrana</i>	87, 257
<i>Orygia antiqua</i>	117
<i>fascelina</i>	17, 48
<i>gonostigma</i>	117
<i>Ornix Loganella</i>	63
<i>Orthosia suspecta</i>	140
<i>Oxyptilus lætus</i>	200
<i>Pachetra leucophæa</i>	177
<i>Pamplusia monticolana</i>	51
<i>Pardalodes Edipus</i>	97
<i>Pempelia formosa</i> , Larva of	14
<i>obductella</i>	85, 63

<i>Peronea comariana</i>	41, 233
<i>potentillana</i>	41, 233
<i>proteana</i>	233
<i>Phibalapteryx lapidata</i>	48
<i>Phlogophora empyrea</i>	214
<i>Phycis subornatella</i>	140
<i>Pieris brassicæ</i>	185
<i>Daphidice</i>	109, 163
<i>Plastingia flavescens</i>	95
<i>Platypteryx lacertula</i> in April	277
<i>Plusia acuta</i>	138
<i>ni</i>	188
<i>Polyommatus Eurydice</i>	259
<i>phlœas</i> , Variety of	116
<i>Pterophorus plagiodactylus</i>	63
<i>Ptilophora plumigera</i> , Larva of	210
<i>Rhodophæa marmorea</i>	87
<i>Satyrus Mæra</i>	178
<i>Scardia choragella</i>	163
<i>Sciaphila perterana</i>	87
<i>Scoparia basistrigalis</i>	86
<i>muralis</i> , Larva of	13
<i>Zelleri</i>	86
<i>Scopula alpinalis</i>	50
<i>decrepitalis</i>	50
<i>Sericoris irriguana</i>	255
<i>Sesia chrysidiformis</i>	163
<i>ichneumoniformis</i>	86
<i>philanthiformis</i>	41
<i>Smerinthus ocellatus</i>	61
<i>populi</i>	232
<i>Spathilepia Clonius</i>	57
<i>Sphinx convolvuli</i>	139, 213
<i>Stilbia anomala</i>	50
<i>Symmachia Cleonyma</i>	4
<i>Tæniocampa opima</i>	16, 256
<i>Tapinostola elymi</i>	112, 140
<i>Teichobia Verhuelhella</i>	235
<i>Thecla rubi</i> , Larva of	232
<i>Tinagma stanneellum</i>	62
<i>Tinea imella</i>	200
<i>Trachea atriplicis</i>	144
<i>Trachonitis</i> (?) <i>Pryerella</i>	130
<i>Triphæna subsequa</i>	141, 212
<i>Udranomia Oreinus</i>	58

	PAGE
Vanessa Antiopa.....	109, 139
,, , Larva of	109
Xylina conformis	188
Zinckenii.....	140
Xylomyges conspiciellaris	17

NEUROPTERA (*in the Linnean sense*).

Brachycentrus subnubilus partially gynandromorphous	19
Cordulia metallica	38, 53

	PAGE
Limnophilus pavidus	53
Mantispa, Metamorphoses of	77
Phryganea obsoleta	53
Sialis chilensis.....	145
Zetterstedt's Trichoptera	

ORTHOPTERA.

Acridium peregrinum	1
---------------------------	---

INDEX TO CONTRIBUTORS.

	PAGE
Anstay, Rev. H., M.A.	139
Barrett, C. G.63, 111, 158, 159, 160, 197, 235, 257, 277	
Bates, H.W., F.Z.S., &c...32, 218, 244, 266	
Batty, J.	88
Baxendale, D.	112
Bloomfield, Rev. E. N., M.A.61, 86, 139, 162, 277	
Bold, T. J.	35, 136, 275
Bond, F., F.Z.S.	40, 86
Boyd, W. C.	40
Brauer, Friedrich	77
Bristow, Rev. E., M.A.	61
Broadhurst, W.	80
Brown, Edwin.....	1
Bruand, Rev. G., M.A.	110
Buckler, W.13, 14, 42, 64, 83, 84, 114, 123, 160, 210, 232, 260	
Butler, A. G., F.Z.S., &c...55, 59, 92, 265	
Campbell, C.	140
Carrington, T. J.	117, 213
Champion, G. C.12, 38, 107, 136, 182, 184, 208	
Chapman, T. Algernon, M.D...18, 81, 103, 132, 250	
Clarke, A. H.	61

	PAGE
Coles, S. H.	60, 86
Cooke, B.	41
Cooke, N.	255
Cooke, T.	86
Cottam, Arthur	109
Courtice, J. L.	41
Crewe, Rev. H. Harpur, M.A.	143
Crompton, Rev. J., M.A.	18
Crotch, G. R., M.A.	154
Curzon, E. Roper	157
Dale, J. C., M.A., F.L.S., &c.	139
Dietze, C.	14
D'Orville, H.	85
Douglas, J. W.	43, 137
Doward, C. R.	17
Eales, C.	112
Enock, F.	40, 41
Fletcher, James	109
Fletcher, J. E.	188
Gorham, Rev. H. S.35, 36, 136, 155, 254	
Gregson, C. S.	18, 62, 88
Greville, E. & H.	86, 110

	PAGE		PAGE
Hamilton, J.....	110	Pelerin, W. G.....	37
Hardy, John	182	Porritt, G. T.17, 63, 110, 143,	234
Hardy, John Ray	207	Potter, J.	111
Harwood, W. H.....	276	Prest, W.....	86, 256
Hellins, Rev. J., M.A....17, 53, 61, 99, 110, 113, 139, 158, 162, 186, 212, 232, 279		Pryer, H.....	112
Hewitson, W. C., F.L.S....	3	Robinson, W. Douglas.....	111, 187
Hislop, R.	10, 229	Ruspini, F. O.....	182
Hodgkinson, J. B.....	41, 62, 87, 188	Rye, E. C. 6, 10, 33, 36, 59, 149, 152, 153, 157, 180, 205, 228, 229, 255, 273, 274	
Hudd, A. E.....	109, 230, 232	Saunders, E., F.L.S.	156
Hutchinson, T.	16, 86, 277	Scott, J. 22, 67, 118, 146, 190, 240, 270	
Jeffrey, W. R.....	188	Scott, J. F.	156
Jenner, J. H. A.	213, 214	Sharp, D., M.B.	181, 204, 205, 217
Joliffe, D.....	86	Shaw, C. A.	276
Jones, A. H.....	158	Smith, F.....	108
Jordan, R. C. R., M.D.	117, 174	Somerville, Rev. J. E., B.D.....	108
Jordan, W. R. H.	40	Southwell, T.	12
Kaye, Ernest	40, 233	Stainton, H. T., F.R.S., &c. 15, 66, 109, 165	
Kidd, H. W.....	210	Stowell, Rev. H. A., M.A.....	85
Knaggs, H. G., M.D., F.L.S....40, 117, 282		Sturt, W. T.	110
Lewis, W. A., M.A.	41	Swinton, A. H.	231
McLachlan, R., F.L.S. ...19, 38, 145, 208, 281		Syme, J. Boswell, LL.D., F.L.S.	139
McNab, Prof. W. R., M.D.	149	Taylor, J. K.	10, 80
Marshall, Rev. T. A., M.A., F.L.S. .. 225, 236, 248		Thompson, W.	86
Mathew, G. F., R.N.	17	Todd, Rev. E. H., M.A.....	61, 212
Matthews, Rev. A., M.A.	152	Traill, J.	88, 113
Meek, E. G.....	41, 85, 87	Ulyett, H.	111
Miller, J. C.	185	Vaughan, Howard...87, 130, 138, 139, 160	
Moncreaff, H.....	81, 154, 207	Verrall, G. H.	127, 200
Moore, H.....	138	Ward, C.	30
Moore, J.....	140	Waterhouse, E. A.	81
Morley, T.....	107	White, F. Buchanan, M.D.....41, 45, 110, 139, 140, 210, 230, 231	
Müller, Albert...36, 38, 39, 60, 61, 76, 88, 89, 108, 144, 157, 209, 230, 254		Wilkinson, T.	152
Murray, Rev. R. P., M.A.	258	Wilson, T.....	161
Nolcken, Baron J. H. W.	233		
Norman, G.....	88, 140		

LIST OF NEW GENERA AND SPECIES, &c., DESCRIBED IN THIS VOLUME.

COLEOPTERA.

GENERA.

	PAGE
CATHAICUS, <i>H. W. Bates</i>	32
LIOTACHYS, "	267
SARTALLUS, <i>Sharp</i>	217

SPECIES.

Abaris notiophiloides, <i>H. W. Bates (Ega)</i>	220
picipes, " <i>(Amazons)</i>	219
robusta, " "	219
striolata, " <i>(Ega)</i>	220
tachypoides, " "	220
Anisotoma similata, <i>Rye (England)</i>	8
Bythinus glabratus, " "	33
Calophæna viridipennis, <i>H. W. Bates (Amazons)</i>	221
Cathaicus Swinhoei, " <i>(Pekin)</i>	33
Ctenodactyla depressa, " <i>(Ega)</i>	222
foveata, " "	221
glabrata, " <i>(Amazons)</i>	221
Helluomorpha glabrata, " "	223
Janus, " <i>(Ega)</i>	223
linearis, " "	224
oculea, " "	223
subrostrata, " "	224
Homalota Sharpi, <i>Rye (England)</i>	6
Leptotrachelus bifasciatus, <i>H. W. Bates (Peru)</i>	222
cruciatus " <i>(Ega)</i>	222
Liotachys antennatus, " "	
Pericompsus grossepunctatus, " <i>(Rio)</i>	245
immaculatus, " <i>(Ega)</i>	246
incisus, " <i>(Amazons)</i>	246
metallicus, " <i>(Rio)</i>	247
picticornis, " "	245
simplex, " <i>(S. Brazil)</i>	246
Pleuracanthus ebeninus, " <i>(Ega)</i>	224
Sartallus signatus, <i>Sharp (S. Australia)</i>	217
Stenus oscillator, <i>Rye (England)</i>	7
Tachys æneopiceus, <i>H. W. Bates (Tapajos)</i>	268
dromioides, " <i>(Amazons)</i>	269
fraterculus, " "	268
platyderus, " "	268
Squiresi, " <i>(Rio)</i>	269
sulcipennis, " <i>(Ega)</i>	269
Tefflus Hamiltonii, <i>H. W. Bates (Angola)</i>	244
Trogophlæus spinicollis, <i>Rye (England)</i>	8

	PAGE
<i>Xystosomus claphrinus</i> <i>H. W. Bates</i> (<i>Ega</i>)	267
<i>Grutii</i> , " (<i>Rio</i>)	248
<i>hilaris</i> , " (<i>Ega</i>)	266
<i>ovatus</i> , " (<i>Rio</i>)	247
<i>sculpticollis</i> " (<i>Ega</i>)	266
<i>strigosus</i> , " (<i>Rio</i>)	248

DIPTERA.

<i>Cecidomyia dorycnii</i> , <i>Müller</i> (<i>Mentone</i>)	76
<i>Chilosia nebulosa</i> , <i>Verrall</i> (<i>England</i>)	201

HEMIPTERA-HOMOPTERA.

<i>Cixius brachycranus</i> (<i>Fieb.</i>), <i>Scott</i> (<i>England</i>)	121, 148
<i>intermedius</i> " " " 	121, 147
<i>Liburnia albofimbriata</i> (? <i>Curtis</i>), <i>Scott</i> ,,	27
<i>Boldi</i> , " " 	26, 68
<i>capnodes</i> , " " 	26, 69
<i>Dalei</i> , " " 	28, 72
<i>Douglasi</i> (<i>Fieb.</i>), " " 	29, 72
<i>extrusa</i> , " " 	194
<i>Fieberi</i> , " " 	27, 70
<i>melanopachys</i> , " " 	26, 70
<i>niveimarginata</i> , " " 	27, 71
<i>Scotti</i> (<i>Fieb.</i>), " " 	25, 67
<i>Signoreti</i> , " " 	26, 69

HYMENOPTERA.

<i>Callimome dorycnicola</i> , <i>Müller</i> (<i>Mentone</i>)	77
--	----

LEPIDOPTERA.

GENERA.

<i>HYDRENOMIA</i> , <i>Butler</i> (<i>script. UDRANOMIA</i>)	58, 99
<i>PARDALOPDES</i> , " 	96
<i>PLASTINGIA</i> , " 	95
<i>SPATHILEPIA</i> , " 	57

SPECIES.

<i>Aricoris Cleomedes</i> , <i>Hewitson</i> (<i>Nicaragua</i>)	4
<i>Emesis Lacrines</i> , " " 	5
<i>Erebia Ankaratra</i> , <i>Ward</i> (<i>Madagascar</i>)	30
<i>Rakoto</i> , " " 	30
<i>Homœosoma saxicola</i> , <i>Vaughan</i> (<i>Britain</i>)	132
<i>senecionis</i> , " " 	131
<i>Lemonias Lasthenes</i> , <i>Hewitson</i> (<i>Nicaragua</i>)	5

	PAGE
<i>Mycalesis Ankova</i> , Ward (<i>Madagascar</i>)	31
<i>Avelona</i> , " "	31
<i>Iboina</i> , " "	31
<i>Vola</i> , " "	31
<i>Necyria Beltiana</i> , Hewitson (<i>Nicaragua</i>)	3
<i>Nymphidium Ethelinda</i> , Hewitson (<i>Minas Geraes</i>)	6
<i>Pieris Antsianaka</i> , Ward (<i>Madagascar</i>)	30
<i>Symmachia Cleonyma</i> , Hewitson (<i>Nicaragua</i>)	4
<i>Trachonitis</i> (?) <i>Pryerella</i> , Vaughan (<i>London</i>)	130

NEUROPTERA.

<i>Sialis chilensis</i> , McLachlan (<i>Chili</i>)	145
--	-----

ADDITIONS TO THE BRITISH INSECT FAUNA BROUGHT FORWARD IN THIS VOLUME.

COLEOPTERA.

	PAGE
<i>Aleochara maculata</i>	136
" <i>villana</i> (?)	275
<i>Anisotoma grandis</i> (?)	139
<i>oligata</i> (?)	139
<i>similis</i>	6
<i>Baridius scolopaceus</i>	107, 136
<i>Bembidium 4-pustulatum</i>	35
<i>Bythinus glabratus</i>	33
<i>Cathormiocerus</i> sp.	159
<i>Colen dentatellatum</i>	9
<i>Corticaria obscura</i> (?)	274
<i>Cryptophagus fumatus</i>	35
<i>Schmidtii</i>	206, 229
<i>validus</i> (= <i>fumatus</i> , E. M. M., vi, p. 257,) nec. Gyll.	9
<i>Homalota Sharpi</i>	6
<i>Meloe decorus</i> (?)	149
<i>Oryctes fulvipes</i>	239
<i>Pellaea depressus</i>	205
<i>Philostribus obs.</i> (introduced)	139
<i>Pimpla piniphilus</i> , "	275
<i>Pteridium intermedium</i>	152
<i>Seydianus rufus</i>	273
? <i>Simphosia metallica</i>	59
<i>Stenus cellator</i>	7
<i>Thyamis curius</i>	297
<i>rufus</i>	296
<i>Tomium bicolor</i>	107
<i>Trachyporus hirtellus</i>	21
<i>aprimophilus</i>	149

	PAGE
? <i>Trichopteryx punctatissima</i>	59
? <i>subaenea</i>	59
<i>Trogophilus spinicollis</i>	8
<i>Xantholinus distans</i>	9

DIPTERA.

GENERA.	
PELECOCERA	299
PROCTA	293

SPECIES.

<i>Cecidomyia floricola</i>	40
<i>Chilosia longula</i>	202
<i>melanura</i>	291
<i>Melanostoma barbifrons</i>	201
<i>Orthoneura brevicornis</i>	203
<i>Pelecocera tricineta</i>	290
<i>Platychirus angustatus</i>	129
<i>malinensis</i>	127
<i>podagratus</i>	129
<i>scambus</i>	129
<i>Proctos apiformis</i>	293
<i>Syrphus seleniticus</i>	200
<i>Xylota alba</i>	292

HEMIPTERA-HETEROPTERA.

<i>Corixa Alutika</i>	295
<i>Hadrodema pinastri</i>	156
<i>Plocionerus luridus</i>	156
<i>Psallus</i> (?) <i>argyrotrichus</i>	52
<i>Salda arenicola</i>	157

HEMIPTERA-HOMOPTERA.

GENUS.

	PAGE
Achorotile	195

SPECIES.

Achorotile albosignata	195
Cixius brachycranus	121, 148
intermedius	121, 147
similis (=leporinus, <i>Marsh.</i> , nec <i>Panz.</i>)	121, 192
simplex	122, 191
stigmaticus (=musivus, <i>Marsh.</i> , nec <i>Germ.</i>)	122, 191
Liburnia adela ..	26
(?) albofimbriata ..	27
Boldi	26, 68
capnodes	26, 69
cognata	28
Dalei	28, 72
denticulata	28
distincta	26, 53
Douglasi	29, 72
extrusa	194
exigua	28
Fieberi	27, 70
forcipata	27
fuscovittata	25
melanopachys	26, 70
mesomelas	29
niveimarginata (=D. thoraci- cus, <i>Marsh.</i> , nec <i>Stål</i>)	27, 71
obscorella	28
pallidula	193
pullula	28
Scotti (=D. pallidulus, <i>Marsh.</i> , nec <i>Bok.</i>)	25, 67
Signoreti	26, 69

	PAGE
(Liburnia) smaragdula	25
sordidula	26
speciosa	27
uncinata	28
unicolor	25
venosa	26
Oliarus leporinus	120
pallidus (=leporinus, <i>Curt.</i> , nec <i>L.</i>)	119
Ptyelus campestris	242, 243
Stiroma affinis	73
mesta	74
Ulopa trivia	272

HYMENOPTERA.

Andricus curvator	39
inflator	157
Cynips longiventris	108
Neuroterus ostreus	209

LEPIDOPTERA.

Acidalia ochrata	138
Homœosoma saxicola	132
senecionis	131
Nyssia lapponaria	282
Pempelia obductella	85
Plusia acuta (not indigenous)	138
Sericoris irriguana	255
Trachonitis (?) Pryerella	130

NEUROPTERA.

Cordulia metallica	38, 53
--------------------------	--------

ORTHOPTERA.

Acridium peregrinum (immigrant) ..	1
------------------------------------	---

LARVÆ OF BRITISH LEPIDOPTERA DESCRIBED IN THIS VOLUME.

Acronycta myrica, <i>W. Buckler</i>	83
Argynnis Selene, ,, ...	114
Camptogramma fluviata, <i>Rev. J. Hellins</i>	279
Chesias obliquaria, <i>W. Buckler</i> ...	261
spartiata, ,, ...	261
Crambus fascinelus ,, ...	160
Deilephila galii, ,, ...	123
livornica, <i>Rev. J. Hellins</i>	99
Erebia Medea, <i>W. Buckler</i> ...	65
Eupithecia irriguata, <i>C. Dietze</i> ...	14
Hepialus velleda, <i>W. Buckler</i> ...	84
Hypsipetes impluviata, ,, ...	42
Lycæna Alsus, <i>Rev. J. Hellins</i> ...	186
Miana arcuosa, <i>W. Buckler</i> ...	260
Pempelia formosa, ,, ...	14
Ptilophora plumigera ,, ...	211
Scoparia muralis, ,, ...	13

REVIEWS.

	PAGE
"A guide to the study of Insects."—A. S. Packard, Junr., M.D.	20
"Transactions of the Norfolk and Norwich Naturalists' Society, 1869—70"	21
"Verzeichniss der Schmetterlinge der Umgegend von Halle an der Saale."—A. Stange... ..	144
"Opuscula Entomologica," fasc. i and ii.—C. G. Thomson	204
"Proceedings of the Perthshire Society of Natural Science, 1869—70"	214
"The Scottish Naturalist"	215
"Synopsis Coleopterorum Europæ et confinium anno 1863 descriptorum."—G. R. Crotch	236
"A Catalogue of the Insects of Northumberland and Durham (Revision of Coleoptera)."	
—T. J. Bold... ..	236
"The Honey Bee" (Bevan).—W. A. Munn	262

WOOD - CUTS.

Genital segments of <i>Liburnia forcipata</i> , <i>pellucida</i> , and <i>discolor</i>	26
Do. of <i>Cixius stigmaticus</i> , <i>brachycranus</i> , <i>intermedius</i> , <i>nervosus</i> , <i>simplex</i> , and <i>similis</i>	193
A new Moth-trap without the aid of light	276

ERRATA.

Page	24,	line	27,	for "Fab."	read "Fieb."	
„	38,	„	13	from bottom,	for "County "	read "Connecticut."
„	43,	„	23,	before "perfect "	insert "wings of the "	
„	44,	„	9,	for "combination "	read "corroboration."	
„	57,	„	7,	„ "Walck."	„ "Walch."	
„	57,	„	12,	„ "Sebous,"	„ "Sebrus."	
„	61,	„	16,	„ "cæsii,"	„ "echii."	
„	83,	„	12	from bottom,	for "punctured "	read "puckered."
„	89,	„	20	„ „ „	"C. fragilis "	read "S. fragilis."
„	104,	„	12	„ top,	„ "emerges,"	„ "emerge."
„	186,	„	20	„ bottom,	dele "of " in	"writing of this."
„	„	„	11	„ „ „	for "rhomboidal "	read "rhomboidal."
„	„	„	7	„ „ „	„ "place "	„ "plate."
„	187,	„	15	„ top,	insert "colour "	after "changing."
„	210,	„	9	„ „ „	dele "hybernated."	
„	254,	„	8	„ bottom,	for "Cecidomyia "	read "Gelechia."

OBITUARY.

	PAGE
Julius Lederer	19
A. H. Haliday	66, 91
A. Haward	66
J. T. Lacordaire	89
T. H. Allis	90
Rev. E. Horton	215
Rev. J. F. Dawson	216

Entomologist's Monthly Magazine

VOLUME VII.

REMARKS ON THE RECENT MIGRATION TO BRITAIN OF *ACRIDIDUM PEREGRINUM*, A LOCUST NEW TO THE EUROPEAN FAUNA.

BY EDWIN BROWN.

By a very singular coincidence, on the very day in October last when the clergymen of the Church of England were reading to their congregations that sublime description by Joel of the ravages of the locust, which formed part of the lessons for the day, a flight of locusts, new to Europe, was silently spreading itself over this island. On the Monday and Tuesday following the Sunday above-mentioned, two specimens of a species of locust were captured in the brewery yards of this town. These proved to be *Acridium peregrinum* of Olivier; a species not mentioned in any work upon European *Orthoptera*.

Several notices appeared in the newspapers about the same time of isolated occurrences of locusts in different parts of the country, as, for instance, at Waterford, in Warwickshire, Worcestershire, Derbyshire, Staffordshire, and Nottinghamshire; but not, as far as I am aware, further north than Derbyshire. In several of these recorded cases, I satisfactorily ascertained the species to be *A. peregrinum*; and as, apparently, no specimen of *Pachyteles migratoria* fell under the notice of any entomologist in this country last autumn, it is fair to presume that all the cases mentioned in the public papers, in or about October last, were those of *A. peregrinum*.

Mr. Bond informs me that at Plymouth many specimens were taken, and that in one case, at least, this insect was thought to be an escaped canary by those who saw it flying about the gardens in that town.

These new visitors seem to have reached our south and south-west coasts, and to have spread themselves very sparsely over about one-half the length of England, and also to have reached the south of Ireland. But how did they reach us? From whence did the swarm start that honoured us with a visit?

In the hope of eliciting some information on this point, I caused a notice of the occurrence to be inserted in a French entomological perio-

dical, which has an extensive circulation on the continent, asking whether the species had been seen, at or about that time, in the south of Europe ; but no intelligence whatever has reached me of this insect having been observed elsewhere in Europe.

According to Serville, and other orthopterists, this species occurs in vast myriads in central and eastern Asia, also in Arabia and the northern and north-western parts of Africa, and it is a species pre-eminently destructive to vegetation. Indeed, it is very probable that this is the very species, the ravages of which the prophet Joel so eloquently describes.

If this flight of locusts had reached us from the north of Africa, it is scarcely likely that the passage would have escaped notice in Spain, Italy, or France. The total silence of continental naturalists on this matter leads me to suspect, that the individuals which reached our shores were the straggling remains of a large horde, which, having set out from the coast of north-western Africa, and having been caught by the south-easterly winds, was mostly destroyed far out at sea ; but that, owing, perhaps, to some westerly change of the wind, or to the "survival of the fittest," or in other words of the strongest, a few straggling detachments arrived here to claim British protection.

There has lately been mentioned a very remarkable instance of the very lofty flight of migratory locusts in (I believe) India, by Lieut. Herschel. That gentleman was examining the sun with a telescope, and was amazed to see the passage of an immense number of minute bodies across the disc of that luminary, and which he at first mistook for *aërolites*. On altering, however, the focus of the instrument, so as to bring into view a distant cloud, he found that these moving bodies were locusts, in the act of migrating.

As further illustration of the immense height at which flight is sustained by some living beings, I may mention a curious fact that presented itself some years ago to two of my sons. They were engaged one afternoon in examining the spots on the sun, having for that purpose thrown the image upon a screen, when they observed, to their amusement, a bird fly slowly across the disc, moving its wings by distinct and regular flaps, after the mode common to long-winged birds. The passage across the face of the sun occupied, as nearly as they could guess, about a second and a half of time ; from which circumstance, and from the distinctness of the figure, it may be inferred that the height from the earth must have been immense.

It is strange that we have acquired so little actual knowledge of the migrations of animals by means of flight. We see swallows and other

birds congregating before their departure, but their actual migration is rarely, or never, witnessed by any one. In the same manner, insects of migratory habits, may, perhaps, sometimes seek a very elevated stratum of air in which to wing their way to "pastures new," and they may thus be carried above intervening clouds to great distances over the ocean, until exhaustion brings them down as food for fishes.

Kirby and Spence mention the destruction of enormous flights of locusts by drowning off the coasts of Africa, where the dead bodies have been washed up in such quantities as to form banks upon the shores several feet in depth. They also state that, on one occasion, a flight of locusts surrounded a ship when 200 miles from the Canary Isles, and that these insects showed no sign of exhaustion.

The first occurrence of *Aceridium peregrinum* in this extreme western part of Europe appears to me to be a noteworthy fact; and I crave a little space in your Magazine to record it, for the benefit of future chroniclers. *P. migratoria* has frequently been captured in this neighbourhood, but we have had no means of ascertaining whether it has been bred in the country, or has reached us by immigration. There can, however, be no doubt but that *A. peregrinum* reached us last autumn by actual flight, and by a route probably of many hundreds of miles in length.

Burton-on-Trent, May, 1870.

DESCRIPTIONS OF FIVE NEW SPECIES OF DIURNAL LEPIDOPTERA
FROM CHONTALES, NICARAGUA, AND OF ONE FROM MINAS GERAES.

BY W. C. HEWITSON, F.L.S.

NECYRIA BELTIANA, n. s.

Upper-side. Male; blue-black, crossed from the costal margin beyond the middle to the anal angle by a curved band of green-blue, divided by the nervures into spots as it approaches the anal angle, where it becomes narrow, and intersected between the nervures by lines of white; the fringe at the apex (which is pointed) and at the anal angle white. Posterior wing with a broad band of green-blue on the outer margin, divided by the nervures into pyramidal spots, each of which is traversed longitudinally by a line of white; the margin black; the fringe white.

Under-side as above, except that the anterior wing has the band much broader and greener; that the costal margin from the base to the

middle is blue; that there are two spots in the cell and one at the end of the cell also blue, and that there is a scarlet spot on the inner margin before the middle; that the posterior wing has three blue spots near the base and one at the end of the cell; and that the blue of the outer margin is broader.

Female like the male, except that it has the wings broader, the spots of the band of the anterior wing more distinct, hastate in form, and whiter, and that it has a scarlet spot in the cell on the under-side of the anterior wing.

Exp. 2 inches.

I have given myself the pleasure of naming this very distinct species after Mr. Belt, to whom I am indebted for the five species now described.

In describing some new species in the March No. of this Magazine, I mentioned that Mr. Belt had had the good fortune to send six species (two of which were new) of the rare genus *Symmachia*. He has now sent another, a beautiful new species, and has also been very successful in taking several species of the rare genus *Anteros*, and amongst them *A. Chrysoprasta* of Bates. He sends home his own collection (to avoid the damp of Nicaragua) of 85 species, which, though unique with him, are nearly all familiar to us from parts of South America. There is a *Leptalis* amongst them which, though small, seems to me to be the female of *L. Cordillera* of Felder.

SYMMACHIA CLEONYMA, n. s.

Upper-side. Male; dark brown, the margins of the thorax and the anal segments of the abdomen scarlet. Anterior wing marked chiefly below the middle by 12 or 13 scarlet spots; two spots near the base, and one (minute) near the middle of the costal margin white, two sub-marginal bands of orange spots. Posterior wing scarlet, with all the margins broadly brown, the outer margin dentated inwardly, two linear spots of orange at the anal angle.

Under-side. Anterior wing as above, except that all the spots and the inner margin are white. Posterior wing white, crowded with black spots and bands: a sub-marginal series of black spots with white hastate spots above them.

Exp. $1\frac{1}{10}$ inch.

ARICORIS CLEOMEDES, n. s.

Upper-side. Male; orange, anterior wing with the costal and outer margin and apex very broadly dark brown, marked by three sub-apical

white spots. Posterior wing with the costal and outer margin broadly dark brown, the costal margin where the wings meet white.

Under-side as above, except that it is pale yellow; that the anterior wing has some sub-marginal white spots below and in a line with the apical spots described above; and that the posterior wing has one or more white spots at the apex and anal angle.

Female like the male, except that it is orange-yellow; that the margins of the anterior wing are narrower; and that the costal margin of the posterior wing is without the white or its brown border.

Exp. $1\frac{2}{5}$ inch.

Unlike any other species.

LEMONIAS LASTHENES, *n. s.*

Upper-side. Male; anterior wing grey-blue, rufous from the median nervure to the inner margin, three lines of black in the cell and a fourth beyond it, three lines below these, a broad sub-marginal band, the outer margin and the nervures between them black. Posterior wing rufous, with three bands of black in and one beyond the cell, and some shorter bands above and below these: a large spot of orange on the outer margin near the anal angle.

Under-side. Both wings grey-blue, with the bands as above, but narrower. Anterior wing with a transverse band beyond the middle, a sub-marginal band of spots, and the outer margin brown. Posterior wing with two spots at the apex and anal angle, and one or two smaller spots between them, all crowned with white.

Exp. $1\frac{4}{5}$ -inch.

Most nearly allied to *L. Thara*.

EMESIS LACRINES, *n. s.*

Upper-side. Male; bright red. Both wings with a sub-marginal series of black spots. Anterior wing with three black lines in and one at the end of the cell, four similar lines below these, the outer line broken by the first median nervule, a large oblong orange spot beyond the middle divided into five parts by the nervures, and bordered inwardly with black. Posterior wing with three black lines in and one at the end of the cell, with some very indistinct lines between them and the inner margin; crossed near the middle from the costal margin to the second branch of the median nervure by a linear band of black; crossed again beyond this by an indistinct band of brown.

Under-side as above, except that it is paler.

Exp. $1\frac{2}{5}$ -inch.

The most beautiful species of this genus.

Nymphidium Ethelinda, n. s.

Upper-side. Male; dark rufous-brown. Posterior wing with the base brown; white from the end of the discoidal cell to the outer margin; marked at the apex by a band of black.

Under-side. Anterior wing grey-white, with the base, a band beyond the middle, and the outer margin, brown; two spots in the cell, two below these, and one at the end of the cell dark brown, bordered with white. Posterior wing as above, except that it is grey-white at the base clouded with brown, and marked by five brown spots, that the apical band is divided into three distinct spots, and that there is a black spot near the anal angle.

Female white. Anterior wing with the base (which is marked by two or three brown spots bordered with white) and the costal and outer margins broadly brown. Posterior wing with a series of seven lunular spots of dark brown on the outer margin, which is black.

Under-side as above, except that there is no brown at the base of the costal margin, and that there is a sub-marginal series of brown spots, bordered with white, on the anterior wing.

Exp. ♂, $1\frac{2}{10}$ -inch; ♀, $2\frac{2}{10}$ -inch.

Hab. Minas Geraes.

Mr. Rogers and his son, who are working hard in Minas Geraes, have sent the very distinct species now described, together with some new *Erycinidæ*, and many most interesting *Hesperidæ*, amongst which I expect to find that about twenty are new. They have succeeded in taking the female of *Morpho Æga*, of which I do not remember to have seen a specimen in any of the European collections, and also a *Papilio* which is new, unless it should prove to be the female of *P. Mentor*.

All the species above described are in my own collection.

Oatlands, Weybridge,
18th April, 1870.

DESCRIPTIONS OF NEW SPECIES, &c., OF COLEOPTERA FROM BRITAIN.

BY E. C. RYE.

HOMALOTA SHARPI, n. s.

Nigra, nitida, pedibus fusciscenti-testaceis, elytris castaneo-fuscescentibus; thorace transverso, æquali, abdomine supra apicem versus fortiter vageque punctato.

Sexus differentia latet.

Long. vix 1 lin.

Apparently allied to the Canarian *H. vagepunctata* of Wollaston, but with a broad head, unicolorous dark antennæ, finer and closer pu-

bescence, &c. It bears a very slight superficial resemblance to *H. muscorum*, Bris. (*picipes*, Wat. Cat.), but must be placed with *H. pulchra*, *clientula*, &c., in group xxii of Dr. Sharp's revision.

Antennæ entirely black, longer and more slender than in *H. muscorum*, being scarcely perceptibly thickened towards the apex, and having the apical joint acuminate and decidedly as long as the two preceding. Head broad, but little narrower than the extreme width of the thorax, black, very shining, with somewhat indistinct and shallow but large and wide punctures. Thorax more than half as broad again as long, convex, unchannelled; the anterior angles somewhat evident, though rounded; pitchy-black, very shining, with exceedingly fine and somewhat remote punctures, interspersed with which are others of the same character as those on the head. Elytra about a third longer than the thorax, chestnut-brown, broadly darkened at the base, sides and scutellum, duller than the rest of the insect, being more closely though still coarsely and shallowly punctured. Abdomen black, shining, moderately narrowed towards the apex, strongly and widely punctured, especially towards the apex. Legs yellowish, slightly infuscated. The whole insect is clothed with short and rather depressed yellowish pubescence, and has moderately long lateral dark setæ.

I have long had a single specimen of this somewhat conspicuous though small species (from the London district) set aside as undescribed in my collection, and now dedicate it to Dr. Sharp, as a trifling acknowledgment of his labours in elucidating the British *Homalotæ*. It has been examined by that gentleman, and also subsequently by Dr. Kraatz; and is considered by both to be a good species, and apparently undescribed.

STENUS OSCILLATOR, n. s.

Sub-depressus, plumbeo-niger, nitidulus, crebre minus profunde punctatus; antennis palpisque testaceis, his apice, illis basi apiceque fuscis; pedibus nigro-piceis.

Long. 1½ lin.

With the palpi and antennæ coloured as in *S. paganus*, this insect has the size, build and dark legs of *S. latifrons*, differing from both those species (to which it is very closely allied, having bi-lobed tarsi, an un-margined abdomen, and un-spotted elytra) in its less strong and not quite so close punctuation, more shining appearance, more decided frontal elevation, and the somewhat less sudden and slighter contraction of its thorax behind. Compared with *S. latifrons*, moreover, its antennæ are thinner and longer.

In Dr. Power's collection. I have sent it to M. Fauvel (who returns it as most probably a new species), and to Dr. Kraatz, who appears not to know it.

TROGOPHLEUS SPINICOLLIS, n. s.

Niger, nitidus, antennarum articulo primo, thorace, elytris pedibusque rufo-piceis; thorace transverso, vix cordato, postice angustato necnon utrinque impresso, angulis anticis in spinam productis; elytris latis hoc duplo longioribus, grosse fere rugulose punctatis. Long. $1\frac{1}{2}$ lin.

This curious insect, at once recognisable by the spined anterior angles of its prothorax, may possibly be the type of a genus not at present characterized; but the decidedly subulate apical joint of its maxillary palpi and its concealed scutellum point to *Trogophlæus* in preference to *Ancyrophorus*, to which genus Dr. Kraatz (who considers it as a decidedly new species) thinks it should be referred. It is allied to *T. scrobiculatus*, Er. (*arcuatus*, Wat. Cat.), and *riparius*, Boisd., but has shorter and stouter antennæ, a greater depth between the back of the eye and hinder margin of the head, a smaller and scarcely cordate thorax, of which the punctuation is very coarse and the dorso-lateral depressions are less conspicuous and not so complicated, and wider, longer, and much more coarsely punctured elytra.

Antennæ rather short and stout, being decidedly thickened towards the apex, and having the sub-apical joints almost transverse; black, except the basal joint, which is pitchy-red. Head black, strongly punctured, with two lateral depressions below the vertex, meeting towards the front, and with the eyes not occupying so much lateral space as is usual in *Trogophlæus*. Thorax pitchy-red, shining, straight in front, with the anterior angles produced into a short but evident lateral spine; contracted behind below the upper third; coarsely punctured, with a broad shallow depression on each side behind, leaving a central longitudinal space, a ridge along the posterior margin, and a small elevation on each side of the central space about the upper third smooth. Elytra pitchy-red, shining, double as broad and rather more than twice as long as the thorax, with a considerable scutellar depression and the trace of an abbreviated oblique depression between it and the shoulder; very coarsely and almost rugulose punctured. Abdomen black, shining, very delicately and at the apex widely punctured. Legs pitchy-red.

Taken by Mr. J. Kidson Taylor, of Manchester, under rejectamenta of the river Mersey, on 9th August, 1868.

ANISOTOMA SIMILATA, n. s.

Ovato-sub-globosa, ferruginea, nitida, prothorace lævigato, antennis basi gracilibus, elytris striato-punctatis, punctis leviter impressis, striâ a suturâ quartâ pone basin leviter arcuatâ. Long. 1 lin.

I should have hesitated in considering this (taken by myself at Shirley) as other than an extreme form of *A. badia*, if Dr. Kraatz had not returned it to me as certainly distinct from that insect, and a good species. It is closely allied to *A. badia*, from which it

differs in its rather larger size and lighter color, the more slender basal joints of its antennæ, and its proportionally rather longer elytra, of which the punctures are, though regular and well defined, much more delicate, the fourth stria from the suture being, moreover, slightly waved about the upper third.

Xantholinus distans, Muls.; Ktz., Ins. Deutschl., ii, 639. Allied to *X. tricolor*, Fab., but differing from that species, amongst other characters, in being smaller, with the thorax reddish *behind* (not *in front*, as in typical *tricolor*) and having finer and less numerous punctures in the two dorsal longitudinal striæ. I have two specimens from Rannoch, one of which has been named for me by Dr. Kraatz. A third example agrees in size and coloration with these, but has the thoracic punctuation of type *tricolor* (which also occurred at Rannoch), so that Mulsant and Rey's original reference of *distans* as a var. of *tricolor* may possibly be correct. *X. distans* somewhat resembles very light specimens of *X. linearis*, as Kraatz remarks; indeed, the same example that the latter authority named *distans* for me has also been named *linearis* by M. Fauvel, from which, however, it seems to differ structurally.

Colon denticulatum, Ktz., Stett. Ent. Zeit., 1850, 189; Tournier, Soc. Ent. Fr., 4th ser. iii, 151. Corroborated as British for me by Dr. Kraatz himself, who states it to be universally exceedingly rare. I have a ♂ from Hythe, and there is a ♀ in Dr. Sharp's collection (also, I think, in Dr. Power's cabinet). It is somewhat allied to *C. appendiculatum*, but is smaller, more convex, and with the posterior femora of the ♂ armed only with a small pointed straight tooth beneath.

I have recently sent a series of the British species of *Colon* to Dr. Kraatz for revision, and have to acknowledge the kind assistance of Drs. Sharp and Power and Mr. Crotch. The above is the only species new to our list among them, the others being *viennense*, Hbst., Zeebe, Kr., *dentipes* and *appendiculatum*, Sahl., *angulare*, Er., *rufescens*, Ktz., *serripes*, Sahl., *brunneum*, Latr., and *latum*, Ktz.,—all of which are corroborated by Dr. Kraatz. *C. puncticolle*, Ktz., and *calcaratum*, Er., are not known to me as British: they are in our list on Mr. Haliday's authority, I believe.

Cryptophagus validus, Ktz., Stett. Ent. Zeit., 1856, 240. This is the insect named *fumatus* by M. Brisout, and brought forward by me on that gentleman's authority in Vol. vi, p. 257 of this Magazine. Dr. Kraatz himself has named it for me: he compares it to *fumatus*, from which it is evidently distinct. I may observe that Dr. Kraatz returns our *C. ruficornis* as utterly unknown to him.

Note on Bledius fuscipes, Rye.—On 15th April last, I captured a few specimens of this insect, at Crosby, near Liverpool. At first sight it resembles *B. subterraneus*, which may account for my not taking more specimens at the time. However, on a subsequent occasion, I took a considerable number of this species. They occurred in a sandy *freshwater* marsh, surrounded by sand-hills of tolerable elevation, especially on the side next the sea. I also found the insect in another marsh, further (about quarter of a mile) inland: here they were, perhaps, more abundant, and were unaccompanied by *B. arenarius*, which was very common in the marsh nearer the sea.

They were generally found in pairs; one, probably ♀, being at the bottom of a down-cast burrow about one and a half inches deep, and the other in a short transverse burrow, close to the mouth.

The burrows were easily detected by the small mound of dry sand raised by the insect in the process of excavation, and were exactly like the sand-heaps formed by *B. bicornis*, only very much smaller in size, and differing completely from the sinuous galleries of either *B. arenarius* or *B. subterraneus*, which are invariably close to the surface.

If *Bledius fuscipes* be a desideratum to any of the readers of the Ent. Mon. Mag., I shall be happy to forward specimens, on receipt of box and return postage.—J. KIDSON TAYLOR, 3, Shakespeare Terrace, Old Trafford, Manchester, 4th May, 1870.

On the synonymy of certain Coptoderides from the Amazons.—In the 'Comptendu' (No. 46) of the Soc. Ent. de Belgique for 5 March, 1870, is a communication from M. Putzeys, revising, on the authority of Mr. H. W. Bates, the synonymy of certain *Coptoderides* described by M. le baron de Chaudoir in vol. xii, Ann. Soc. Ent. Belg., and which unfortunately clash with Mr. Bates' species described shortly before in this Magazine. The following corrections are noted by M. Putzeys: Gen. *Ferus*, Chaud., = *Phlæotherates*, B.; *Coptodera affinis*, Ch., = *versicolor*, B.; *C. Batesi*, Ch., = *megalops*, B.; *C. spinipennis*, B., = *acutipennis*, Buq.; *C. æneocuprea*, Ch., = *chalcites*, B.; *C. rotundipennis*, Ch., = *relucens*, B.; *C. chalcoptera*, Ch., = *æneorufa*, B.; *C. debilis*, B., = *nitidula*, Buq.; *C. amazonica*, Ch., = *cupreotincta*, B.; *C. misella*, Ch., = *lineolata*, B.; *C. discoguttata*, Ch., = *cyanella*, B.; *Lelis viridipennis*, Ch., = *C. rutila*, B.; *L. bifasciata*, Ch., = *C. polygona*, B.; *Stenoglossa nigrosignata*, Ch., = *fulminans*, B.; *S. corticalis*, Ch., = *dromioides*, B.; *S. atriceps*, B., = *transversa*, Reiche; *S. pallida*, B., = *nigrostriata*, Reiche.—E. C. RYE, Putney.

Coleoptera in Morayshire.—Having revisited this district in May, 1868, I took additional notes of the species that came in my way. The most valued capture after *Magdalinus duplicatus* and *Cryptohypnus pulchellus*, both recorded in Vol. 5 of the Magazine, was the tiny *Brachonyx indigena*. It has been said that Turner obtained this insect in Scotland upon birches: my experience, however, coincides with that of continental collectors, who find it, according to Lacordaire and others, on pines in the boreal regions of Europe, and in some of the mountainous districts of Germany. Only two specimens were obtained, notwithstanding repeated sweepings and beatings on several occasions all around "the lucky spot." These examples differ somewhat in colour, the one being uniformly testaceous, while the other has the thorax of a dark brown (and is the smaller of the two).

Along the landward edge of the Culbin Sands (by the natives pronounced Coobin) there are some pools of water, on the damp borders of which, accompanied by *Bledius subterraneus*, **Dyschirius impunctipennis* was not uncommon. In rabbit burrows *Leistus rufescens* appeared, and in the neighbouring fir plantations, as well as in some other localities, *Pissodes notatus* was taken sparingly, *P. pini* being everywhere abundant.

In the woods of Darnaway, I met with *Gymnusa brevicollis*, *Philonthus cinerascens*, and *P. corvinus*, in the half-submerged moss by the side of pools, where also *Bembidium doris* was not uncommon, along with *Pachyrhinus canaliculatus*. I was surprised to find associated with these marsh-lovers several specimens of *Trachyphlæus scaber*, which I had always regarded as partial to dry places. The circumstances attending their capture did not seem to favour the idea of their having been blown into the water. Two or three specimens of *Berosus luridus*, found in Scotland before only by Mr. Little, I believe, in Dumfries-shire, and one of *Hyperaspis reppensis* were more unexpected captures than their companions *Chætarthria* and *Cyclonotum* in the same place. Here, also, in broom and furze stumps, were taken *Phlæophthorus rhododactylus* and *Hylastes trifolii*. In the Elgin Museum, which owes so much in all the natural history departments to the enthusiasm and well-directed skill of Dr. Gordon, of Birnie, I observed a specimen of *Saperda Carcharias* from this locality.

In the grounds about Altyre I found for the first time **Homalota cinnamomea*. As in England, it is a pensioner of the Goat-moth larva. *H. vicina*, *Soronia punctatissima* and *grisea* sipped in boon companionship the vinous juice that flowed from the wounded birches. *Trichopteryx lata* was everywhere under fallen leaves. *T. grandicollis* and *Ptenidium pusillum* occasionally appeared in the net, and **Pteryx suturalis* was rather plentiful under the bark of a fallen pine. From the decaying twigs of fir-trees also, here and elsewhere, **Tomicus micrographus* was frequently beaten.

The Cluny Hills and woods of Sanguhar on the outskirts of Forres afforded several additional species, such as *Athous niger* and *vittatus* on oaks, *Corymbites impressus* on pines. *C. cupreus*, *Sericosomus brunneus*, *Campylus linearis*, *Limonius cylindricus*, were obtained by sweeping the herbage. *Helodes marginata*, *Podabrus alpinus*, *Telephorus paludosus* and *elongatus*, *Malthinus flaveolus* and **frontalis* (on firs), *Malthodes biguttatus* and *flavoguttatus*, *Necrobia violacea*, *Ernobium molle* and *Cis bidentatus* were the most note-worthy of the Malacodermata. *Rhynchites germanicus*, *nanus*, *megacephalus* and *betule* all occurred on birch. *Epurea æstiva*, *florea*, *melanocephala*, *obsoleta*, *pusilla* and **neglecta* (one specimen), *Omosita depressa* and *colon*, were found in their usual haunts. *Paramecosoma* occurred sparingly by the border of streams, though not uncommon on Tweed-side. *Ips 4-pustulatus* and *ferrugineus*, *Rhizophagus depressus*, *ferrugineus* and *dispar* were all found on fir logs; but the last named is not confined to them. *Megacætes ruber*, *Ceuthorhynchus marginatus* (single specimens, and not common seemingly in any part of Scotland), *Alophus triguttatus* and *Miccotrogus picirostris* were among the suburban weevils. Near the Braes of Moray, **Apion genistæ* was very scarce on *Genista anglica*, while *A. ulicis* abounded as usual on the common furze.

On the banks of the Findhorn, *Colon brunneum* was picked up, and *Tachypus pallipes*, of which I formerly took a single example, re-appeared in some numbers.

It seems to differ in its ways from *B. paludosum*. In the wide gravelly or sandy bed of the river, of which a great part is dry in summer, there are little green oases formed by tufts of milfoil, common birdsfoot trefoil, &c., under which the creature, hides, and is only occasionally seen running over the intervening spaces; whereas *paludosum* is often found trooping over the damp sand, and is not averse even to a little mud. By the river, also, **Amara lucida* was taken, once and again.

Without specifying localities, and omitting many of commoner occurrence, I noted the following: *Calathus micropterus* and *rotundicollis*, *Anchomenus viduus* and *gracilis*, *Bradycellus collaris* and *similis*. *Bembidium anglicanum*, *concinnum*, *pallidipenne* and *prasinum*, *Helophorus arvernensis*, *Philhydrus melanocephalus*, *Liodes glabra* and *castanea*, *Priobium castaneum*, *Octotemnus glabriculus*, *Anthonomus ulmi*, *Otiorhynchus monticola*, *Donacia sericea* and *comari*, the latter of which seems very much more common in Scotland than the former, *Chrysomela varians* on *Hypericum perforatum* (frequents also *H. quadrangulum*), *Gonioctena pallida*, on hazel, *Phædon betulae* (first taken in Berwickshire only four years ago), *Lyperus flavipes*, *Crepidodera Modeeri*, *Psylliodes cupronitens*, *Coccinella 18-guttata*, *oblongo-guttata* and *ocellata*, *Erochomus 4-pustulatus*. *Homalota cambrica* (*velox*), *subtilissima* (both by sides of streams, the former running over the surface, the latter hiding under the shingle, accompanied by *Thinobius longipennis*), *elongatula*, *volans*, *immersa*, *analis*, *brunnea*, *subænea*, *succicola*, *fungicola*, *subterranea*, *sericea*, *lavana*, *cinnamoptera*, *aterrima*, *orbata*, and *clientula*. These have enjoyed the benefit of Dr. Sharp's examination. *Encephalus complicans*, *Gyrophæna gentilis* and *nana* in *Agaricus gambosus*. *Tachinus flavipes*, **Mycetoporus lucidus* (taken by me also in Berwickshire, many years ago), *Quedius lateralis*, *umbrinus*, *maurorufus*, and *fulvicollis*, *Staphylinus nebulosus*, *Philonthus decorus*, *Lathrobium quadratum*, *Anthophagus testaceus*, *Geodromicus nigrita*, *Lesteva pubescens* and *punctata*.

Pocadius ferrugineus, *Sinodendron cylindricum*, *Pogonocherus hispidus* and *Byrrhus dorsalis* not found by myself, were kindly presented to me by Mr. Norman, who has undertaken the investigation of the *Lepidoptera* of the province.

The species with an asterisk prefixed are now, I believe, for the first time recorded as Scottish.—ROBT. HISLOP, Blair Bank, Falkirk, March, 1870.

Captures of Coleoptera near Lewisham.—I have much pleasure in recording the capture of a few more examples of *Calodera rubens*, Er., in the same locality as those mentioned by Mr. Rye when introducing the species as British. I have also taken in the same neighbourhood the following species (with others), already known to occur at Lee:—*Pachyrhinus 4-nodosus*, *Stenus solutus* and *pallipes*, *Lathrobium longulum*, *Tachyporus tersus* (of Waterh. Cat.), *Euplectus ambiguus*, *Apion difforme*, *Homalota exilis* (major form rarely, minor form commonly) and *orphana*, *Hygronoma*, *Anchomenus gracilis*, *Oxyptoda lentula*, *Bryaxis impressa*, *Bythinus Curtisii*, *Psammæchus* and *Ocyusa maura*.—G. C. CHAMPION, 274, Walworth Road, London, S., March, 1870.

Note on the recent abundance of Coccinellæ.—Norfolk shared the advantages derived from the timely visit of immense flights of Lady-birds, and the plague of *Aphides*, from which vegetation suffered so severely, rapidly disappeared. There has

been great discussion as to how far we are indebted to immigration for these friendly visitors, and from whence they come; of course opinions differ greatly, but I am inclined to believe we need not revert to the Continent to account for their presence. In my own garden there have been immense numbers, but the number of the larvæ was also very great. Their onward movement in search of fresh supplies of food would, I think, account for their congregating on the shore, which has led to the impression that they had just arrived in this country; but their flight, though rapid, is not, I believe, sufficiently sustained to carry them far over the sea, into which they would drop exhausted and perish. In support of this view I will mention that a yacht, belonging to Mr. Cresswell, of Lynn, sailing off Hunstanton, passed through a mass of dead lady-birds about 10 feet broad, accumulated on the surface of the water for two or three miles. This occurred in the Wash, about nine miles from the Norfolk, and thirteen miles from the Lincolnshire shore; the wind was very light from off the Norfolk shore, and the exact locality the entrance to the channel called the "Bull Dogs." Mr. Cresswell thus accounts for their presence:—At low water there are uncovered sands, with pools and channels between them, and he presumes that the mass of dead Lady-birds were drowned by the rising water and brought by the current into the vast accumulation the yacht passed through. There is very little doubt they left the Norfolk shore, and, alighting on the first uncovered spot they came to, were saved from dropping exhausted into the sea, only to be drowned by the rising tide. But, had they been able to return to the Norfolk, or proceed to the Lincolnshire coast, any one witnessing this would have been impressed with the belief that they came from the Continent.—T. SOUTHWELL (extracted from the "Transactions of the Norfolk and Norwich Naturalists' Society").

Description of the larva of Scoparia muralis.—On the 20th of May, 1869, Dr. F. Buchanan White kindly sent me a supply of larvæ of this species, together with some of their native food-plants, *Bryum capillare* and *Hypnum cupressiforme*, on which they continued to feed till about the end of the month, constructing, by means of slight silken threads, little tunnels for themselves through the moss or the soil at its roots; and when disturbed, they could show considerable activity.

The full-grown larva is five-eighths of an inch in length, very slender, cylindrical, and tapering a little behind, the head rounded, and a trifling degree smaller than the second segment.

In colour it is either a dingy ochreous-brown, greyish-brown, or a turbid violet-brown, darkest on the back, becoming gradually paler towards the ventral surface; a faint indication of the dorsal vessel is visible as a rather darker pulsating stripe, which commences on the second segment, conspicuously dividing the dark brown plate there into two parts; on the other segments are the ordinary series of tubercular spots, horny, dark brown, and very large in proportion, especially on the back, and shining like the head, thoracic plate, and the anal paler plate; on the dorsal region of each segment the anterior pair of these spots are circular, and the posterior pair transversely oval, and every one is furnished with a fine brown hair.

No less than fourteen of the moths appeared between June 27th and July 8th.—WM. BUCKLER, Emsworth, January, 1870.

Description of the larva of Pempelia formosa.—For examples of this larva I am indebted to Mr. F. Franks and Mr. W. Machin, from whom I received them on the 21st of July and the 19th of August, 1868.

Their usual food appeared to be the leaves of elm, though, in confinement, I found they would also eat birch; and, when a fresh supply was given to them, their first proceeding, before satisfying their appetite, was either to spin two leaves together or to turn down the corner of a leaf with a few threads: under this shelter they began to feed; and in a day or two a considerable number of threads would be spun, agglutinating the leaves together in various directions. The earliest were full fed by August 20th, and the latest by the 15th September.

The full-grown larva is about five-eighths of an inch or little more in length, tolerably cylindrical, and, when looked at from above, of nearly uniform bulk, but, viewed sideways, the three hinder segments are seen to taper beneath towards the anal extremity; all the segments are plump, and rather deeply divided; the head is rounded at the sides, and a little flattened in front.

The ground colour is a deep olive-green, much freckled with darker green; the usual dorsal and sub-dorsal stripes are of this colour, each of them being enclosed within two rather sinuous fine lines of yellowish-olive; another such line runs between the sub-dorsal and the spiracles; the spiracles are whitish, outlined with black, and immediately beneath them is a whitish-green line, which is followed by a similar one just above the legs, so that altogether there are no less than twelve of these pale lines on the back and sides; the ventral surface is dull green: the head is of the freckled ground colour, the mouth blackish, with the papillæ whitish; the second segment has a shining plate on which are faintly seen the colours and lines of the back; on each side of the third segment in the sub-dorsal region is a conspicuous transverse oval white spot, bearing a black dot within its lower margin.

The tubercular dots are blackish, each emitting a rather long greenish hair; though amongst these larvæ were some with whitish-green dots, and two that varied in the ground colour, being of a bluer green than the others above, and whitish-green beneath.

The moths appeared from July 12th to 17th, 1869.—Id.

Description of the larva of Eupithecia irriguata, Hüb.—Full grown larva 18-20 millimètres in length, very slender, almost equally thick throughout, but slightly thinner towards the head. Body finely and transversely ribbed; sutures of segments little developed. Ground colour in the young larva, citron-yellow, afterwards yellowish-green, on the back sometimes bluish-green. Head moderately large, brown, without markings; front-legs yellowish brown; other legs, and anal pro-legs, wine-red, with pale margins. On the back, excepting the two first segments, are double red spots in the form of two trapeziums united at their smallest sides, yet with the corners somewhat rounded, so that the spot assumes a biscuit shape, with the narrowest part corresponding with the incision of the segment—towards the anal segments these dorsal markings fade away, whilst on the anterior segments they are smaller and more compressed. Anal flap reddish-brown, with pale margins, confluent with the last dorsal spot. Dorsal line only visible on those first segments

that are streaked longitudinally with yellow and red. Sub-dorsal red, only indicated on the last third of each segment, seldom appearing as a continuous red line, and often altogether wanting. The space between the sub-dorsal lines and the dorsal spots forms a pale yellow surrounding of the dorsal marks. A defined lateral line is not evident, but there are slight swellings along the side angles. On the last fourth of each segment there is a reddish brown streak under the side angles. Segmental divisions yellow, in some examples rosy on the belly. This latter is of the ground colour, and shews sometimes a fine white middle-line. Before the change the larva becomes dirty red, but does not appear to vary otherwise. In habit it is allied to *obrutaria*, H.-S. In repose it sits stretched out, somewhat curved, and draws the anterior segments together. It was full-grown here, in 1869, from the end of May up to the middle of June, on oaks, seldom on beeches, at the same time as, and also later than, *E. abbreviata*, and was not rare on the margins of woods, feeding on the leaves of these trees. For pupation it crawls under bark and moss, and changes there to a slender, dark-brown, thick-skinned pupa, sometimes with olive-green wing-cases. The moth appeared in the spring of the following year. — C. DIETZE, of Frankfort-on-Maine (in the "Stettiner Entomol. Zeitung," 1870, p. 336).

Butalis incongruella to be henceforth called *Amphisbatis incongruella*.—In the third part of the Stettiner Entomologische Zeitung for 1870, is a paper by Professor Zeller, with some notice of his Lepidopterological observations in 1869, and in a note in this paper (p. 304), that illustrious Entomologist proposes the generic name *Amphisbatis* for the singular *Butalis incongruella*.

In the Entomologist's Weekly Intelligencer, Vol. viii, p. 194, we read of this insect, "The case of this larva is perfectly unique, and the larva itself is quite as singular; the perfect insect was so discordant from everything else that we gave it the specific name of *incongruella*, and no doubt, eventually, a new generic name will have to be created for it. It is important to bear in mind that the specific name was given to the perfect insect long before the larva was discovered, and that it had therefore no reference to any supposed incongruity in a larva being found by an Entomologist whilst lunching."

This last sentence may, perhaps, need some explanation; it will be found at p. 113 of Vol. i of the Entomologist's Weekly Intelligencer. "An unusual number of discoveries have been made, not whilst Entomologists were looking for insects, but while they were resting discussing some luncheon: for one thing they then remain stationary in one spot for some little time; but we fancy the main cause of discoveries being then made is, that as they are not specially looking on any plant, any moving thing that enters their field of view more readily attracts attraction. Twice during the month of July has Professor Zeller, on such occasions, found a case-bearing larva, which put its head out indifferently at either end of its case, and was as lively and tremulous as a *Gelechia* larva."

For this larva, which so readily protrudes its head at either end of the case, Professor Zeller now proposes the generic name of *Amphisbatis*.

"*Amphisbatis*," remarks Professor Zeller, "differs from *Butalis*. 1°—in the "denticulate antennæ (in the ♂ pubescent-ciliate); 2°—in the second joint of the

"palpi being hairy beneath ; 3°—in the extremely short tongue ; 4°—in the different venation of the wings ; and 5°—in the slender, extremely lively, case-bearing larva.

"This larva differs from all other case-bearers by its slenderness, its sharply separated thoracic segments, its tremulous movements when crawling, and by the readiness with which it turns round in its narrow case, and walks forward from the open hinder end of its case. The slender, fusiform case, which is 5—6 lines long, has a certain similarity to that of *Psyche pulla*, only that the pieces of dry grass of which it is composed are fastened closely to one another and almost smoothly, and that both ends of the case are quite free and open. From the comparative smoothness of the case, the larva moves forward with it very easily, but should it meet with any obstacle, it quickly turns round in its case, puts its head out of the other end of its case, and walks away in another direction.

"I discovered a solitary larva at Glogau accidentally some years ago, on a sandy place among lichens and various low plants, but as I could not make out on what it fed, I could not rear it. Some years later, at Meseritz, I found out that it fed on *Hieracium pilosella*, and in 1868, I found it when searching for it. On the 18th of July, I sought for it in the dry fir plantation where I had occasionally previously met with it, and as I lay on the ground searching amongst the tufts of *Hieracium*, I met with four larvæ of different sizes, one of which was crawling on a bit of *Hieracium* (I had generally only found them on the sand), and one actually sticking in the heart of a plant of *Hieracium*. I fed them with *Hieracium* in a flower pot till they were full grown. Stainton had told me that these larvæ also fed on heather, which did not occur in the locality where I found my larvæ. They spun their cases up firmly at one end like the larvæ of *Coleophora*. On the 1st January, 1869, I bred (in-doors) a female, so that I now knew the species which this curious larva produced."

The perfect insect was first bred more than ten years ago by the late Herr Friedrich Hofmann, of Ratisbon, and since then, Mr. T. Wilkinson, of Scarborough, has obtained the larvæ from eggs deposited by the females of *incongruella* ; but can we not all perfectly appreciate Professor Zeller's feelings of not being quite sure of the thing till he had seen it himself?—H. T. STAINTON, Mountsfield, Lewisham, May 7th, 1870.

Capture of Dicranura bicuspis, &c., at Leominster.—From various parts of the kingdom the complaint has reached me of the unusual scarcity of insects this spring. Such has not altogether been the case here, although several species have not occurred which are some seasons met with. The sallow-bloom was very productive ; once again I had the pleasure of taking all the British species of the genus *Tæniocampa* on one night ; as usual, *opima* was very rare, only one example was taken, *leucographa* and *gracilis* were very still when boxed, and reached home in fine condition ; *miniosa* and *populeti*, on the contrary, soon damaged themselves. Hybernating moths were represented by three *X. petrificata*, three *semibrunnea*, one *H. croceago*, &c., &c.—the last-named species had never before been taken here.

Early in April the weather became very cold, and most insects disappeared ; but, nevertheless, several species of *Eupithecia* occurred—*consignata*, *irriguata* (two, both unfortunately males), *indigata* (in numbers), *vulgata*, *dodoneata*, *abbe-*

viata, *pumilata*, and *coronata*. On the 7th of this month it became much warmer, and I spent a few hours in a neighbouring wood, and found *E. pendularia*, *P. pectinaria*, *N. pulveraria*, *L. lobulata*, *H. impluviata*, *P. tersata*, *C. silaceata*, *P. lacertula* and *fulcula*, and other commoner species, already on the wing; but the great capture of the day was a splendid *Dicranura bicuspis* just emerged, sitting on a birch-trunk close to its pupa-case.

Is it generally known that the larvæ of *B. callunæ* in confinement will feed well on ivy? I proved this to be the case last winter.—F. HUTCHINSON, Grantsfield, Leominster, 13th May, 1870.

Captures of larvæ of Lepidoptera at Southport.—On April 15th, I spent three or four hours at Southport, for the purpose of collecting larvæ. The most abundant species noticed (not excepting *Chelonia cajo*) was *Orgyia fuscilina*, of which I boxed about sixty from the dwarf willows, and might have collected more had I required them. *Bombyx quercus* was common, more especially on the south sand-hills, whilst *O. fuscilina* appeared to be most numerous on the north, where I also took *B. rubi*, which species appeared to be rather scarce, however. On the south shore, I examined the willows for the purpose of ascertaining whether the larvæ of *Liparis salicis* had recommenced feeding. The bushes were only just bursting into leaf, and not a larva was to be seen, though the species occurs there in profusion. A search in the cracks of a decayed branch, and under the copings, &c., of a row of palings running close beside the willow bushes, however, discovered the small cocoons in numbers, which, on being broken open, revealed the little larvæ still inside. Doubtless, they would soon spread themselves all over the trees. I picked up a pupa of a *Smerinthus* (doubtless *ocellatus*) protruding from the sand under one of the willows.—GEO. T. PORRITT, Huddersfield, April 23rd, 1870.

Xylomyges conspiciellaris in *Worcestershire*.—I have much pleasure in recording the capture of a fine male specimen of this insect at rest on an oak tree on May 7th, at Middleyards, Bransford Woods, this being the second time I have taken this rare species.—C. R. DOWARD, Pitmaston Road, St. John's, Worcester, 9th May, 1870.

Early appearance of Acronycta aceris.—I noticed this species yesterday at rest on the trunk of a poplar tree in this dockyard. It seems rather early, especially as we have had such a continuance of cold easterly wind. Last year it was tolerably numerous, and I observed it in fine condition as late as the middle of August, at which time its full-fed larva was also to be found. *Cerura vinula* appeared for the first time yesterday.—G. F. MATHEW, Royal Naval Barracks, Sheerness, 12th May, 1870.

Effect of the past winter upon hibernating larvæ.—With reference to what Mr Barrett said of *Lithosia stramineola* and *griseola* at p. 277 of Vol. vi, I am sorry to have to state that the bitter weather in February and March killed every larva I had; up to that time they had thriven remarkably well. I had a large number of both species, and was full of hope that I should have some decisive result to announce in due time: now I can only beg for more eggs. The past winter has done more harm to my hibernating larvæ than any I can remember.—J. HELLINS, Exeter, May, 1870.

Migration of white Butterflies.—I believe it was at the end of August, 1849, that one fine Sunday morning I returned from Havre by steamboat. The air was perfectly still, and all pleasant and smooth above and below. A splendid flight of wild swans crossed our track, making for some place in Calvados I should think. Their double line in wedge-like form, with the dropping of the leader every moment or so alternately down to the rear of each line like a pearl strung on a thread, was a sight never to be forgotten.

About mid-day, as we were all reading on deck, we seemed to plunge into a swarm, or snow shower, of common white butterflies, and so continued for nearly an hour. They literally covered us, circling round, and playing up and down the vessel, and I was struck with the fact, that they seemed to keep up with the vessel's speed—about eight knots an hour—as well as to flutter up and down.

Either they flew at our pace easily, or were assisted by the air carried along with us in the calm. Gradually they thinned off, and a breeze arising, disappeared. At the same time an exhausted pigeon fell on board, and a thunderstorm on the English coast coming in sight, closed our pleasant Sunday trip with a beauty of a different kind.

I noticed in the papers a few days afterwards, a paragraph about a large flight of white butterflies having crossed the Channel, and landed on the Hampshire coast, and thought I had seen them on the passage.—J. CROMPTON, Norwich, April, 1870.

Note on Cossus ligniperda.—It is well known that the larva of *Cossus ligniperda* ejects from its mouth a colourless (or nearly so) strong scented fluid. I had always supposed this to be of a watery nature; but, having soaked up some of it with blotting paper and set fire to it, it burned as though it were turpentine or oil. Should this fluid prove to be of an oily character, it would be a very interesting fact. I write this note to suggest further investigation, as I do not meet with *Cossus* with sufficient frequency to follow the matter up myself.—T. ALGERNON CHAPMAN, M.D., Abergavenny, April, 1870.

Notes on occasional second-broods in single-brooded Lepidoptera.—It is curious to note how some species of *Lepidoptera*, ordinarily single-brooded, are sometimes double-brooded. Thus, a second brood of *Liparis salicis* was met with in thousands on our sand-hills in Lancashire, in October, a few years since. The Ontario poplars on which the larvæ fed in August and September are now all dead through defoliation by them. Again, a friend here bred several broods of *Dasychira pudibunda* in one year, the last brood appearing on and about Christmas day, the eggs from which hatched early next spring. I possess *Orgyia gonostigma* given to me by Mr. Machin, who told me they were of a third-brood in one season; and I have examples of *Phragmatobia fuliginosa* bred from eggs impregnated only thirty-five days before the perfect insects appeared; the female that produced these again paired with the same male, and laid a second batch of eggs which I gave to a friend who bred insects therefrom, but much later in the season; the same moths paired a third time, and the female again laid a batch of eggs, these continued a long time without hatching, but did so before the winter set in, and produced moths the following season. The first batch of eggs were given by me to Mr. Edmondson, who fed the larvæ on lettuce; the second batch I gave to Mr. Alexander Cooke; and the third I kept myself. The two

first lots were laid whilst we were on the sand hills, the third being deposited the day following. This is a well authenticated fact, showing how little we know of the Natural History of our favourites; and pointing to the possibility of observations being correct for some time and places, but not for all. *Leucophasia sinapis* is said to be double-brooded in France and the New Forest, the second brood being the form known as *dinensis*; but this form has never been known to occur in North Lancashire or Westmoreland, where *sinapis* is the most common white butterfly, but is never seen there after the early part of June.—C. S. GREGSON, Stanley, Liverpool, March, 1870.

[No doubt exceptional second-broods are liable to occur occasionally in all single-brooded species; we possess examples of a second brood of *Arctia caja*. In the south of England we imagine *L. sinapis* to be universally double-brooded. The vagaries of Mr. Gregson's pair of *P. fuliginosa* as detailed above, are interesting; but the three batches of eggs undoubtedly were only portions of one, and would probably have been all deposited at once had the moths not been disturbed; the difference of treatment they would experience at the hands of three different collectors is quite enough to account for the discrepancies in the time of hatching. —EDS.]

On a singular instance of partial gynandromorphism in a Trichopterous insect.—During April my friend Mr. W. C. Boyd informed me that he had found *Brachycentrus subnubilus*, Curtis, in great abundance near Cheshunt, and, at my request, he captured a long series. Among them was one example which he thought to be hermaphrodite, and on examination, I find it combines the characters of both sexes, but in a very unequal manner. I may as well explain beforehand that in the family *Sericostomidae* the palpi are remarkably different in the sexes. In *Brachycentrus* the maxillary palpi of the ♂ are short and thick, curved over the face, and 3-jointed; in the ♀ these organs are long and thin, geniculate, and 5-jointed. In the venuration of the wings in this genus are the following differences; in the fore-wing of the ♂ the seventh apical sector is simple, whereas it is furcate in the ♀: in the hind-wing there are two more apical forks in the ♀ than in the ♂. Now, in Mr. Boyd's example, both maxillary palpi are decidedly ♀, as is the left fore-wing, which measures 6 lines in length, the right only 5 lines, and with the ordinary neural differences. But in the appendices and in every other respect (including both hind-wings) the characters are as decidedly ♂.

I am not aware that a parallel instance has been recorded. It is the second case of gynandromorphism known to me as occurring in the *Trichoptera*; the other being a specimen of *Limnophilus striola* taken by Mr. B. Cooke, as recorded in the Proc. Ent. Soc., 3 ser., vol. v, p. xcix.—R. McLACHLAN, Lewisham, 3rd May, 1870.

Obituary.

We deeply regret to have to announce the death of Julius Lederer, of Vienna, —one of the most active and energetic Lepidopterologists Europe has produced.

He died on the 30th of April, at Vienna. During the winter he had not been in good health, but was not so unwell as to excite any apprehensions, and he left home on the 8th of April for a summer's collecting tour in the Balkan—but the cold at Widdin induced him to turn further south. When, however, he reached Rustschuck he became so unwell, that he decided to return home, and reached Vienna on the 16th of April, where rest and home comforts seemed to restore him; and he even talked of starting again for Asia Minor—but it was not to be: towards the end of the month he became more seriously ill, and died on the 30th, to the great regret of a large circle of Entomological friends.

Reviews.

A GUIDE TO THE STUDY OF INSECTS, and a treatise on those injurious and beneficial to Crops.—By A. S. PACKARD, Junr., M.D. Salem (Massachusetts), Naturalists' Book Agency; London, Trübner & Co., 8vo., 1868–9.

We seldom have had the pleasure of noticing a work of such sterling merit as this. Were we to compare it with previously published treatises of a similar nature, we should say it is a combination of Westwood's "Introduction" and Curtis's "Farm Insects," but a combination handled in such a manner as to convey to the reader little idea of either. While aiming at making it *popular*, the author has in no single instance lost sight of the scientific side of the question, and has produced a "Guide" which must henceforth be looked upon and quoted as an original and pains-taking elucidation of the subject. The book is a marvel of cheapness, and should serve as a model in its "getting-up," its paper and printing being good, and its multitude of wood-cuts and several full plates being generally well executed. It was originally published in parts (10 constituting the volume), and extends to 700 pages of large octavo. Naturally, the illustrations are for the most taken from American subjects; but the author has aimed at making the work a "Guide" for all entomologists, whatever may be their nationality,—has copiously extracted from European works wherever American materials, or insufficient knowledge, failed to convey an adequate idea,—and has given full explanations of the anatomy of insects, with instructions for their capture and preservation.

The arrangement is decidedly original, though based to some extent upon that of Leuckart and Agassiz. Including myriapods and spiders under the Class *Insecta*, Dr. Packard divides this into three orders, *Hexapoda*, *Arachnida*, and *Myriapoda*. From the *Hexapoda* (or true insects) he forms seven sub-orders in the following sequential arrangement—*Hymenoptera*, *Lepidoptera*, *Diptera* (including *Pulex* and *Beauva*), *Coloptera* (including *Stylops*), *Hemiptera* (including *Thrips*, the *Pediculi*, and *Mallophaga*), *Orthoptera* (including *Dermaptera*), and *Neuroptera*, this latter comprising the order in the Linnean sense, and including also the *Lepismidæ* and *Poduridæ*. This arrangement Dr. Packard considers to be a natural one, commencing with the most highly perfected, and ending with the most "degraded," forms." On a subject upon which there is so much allowance to be made for differences of opinion, we are not disposed to be very critical, yet there are some things we can scarcely pass over in silence. At page 108, after enumerating structural reasons why the *Hymenoptera* should head the series, our author adds — "Besides, as animals endowed with instincts and a kind of reason, differing perhaps only in degree from that of man, these insects outrank all other Articulatæ." Yet his plan forces him to the admission (pp. 586–587) that the *Termitidæ* are as fully endowed with reasoning faculties, adding that "Nature, constantly repeating the same idea, here leaps over whole groups of insects." But to Dr. Packard, as to all systematists, the *Neuroptera* generally have proved a stumbling-block, and we actually find the *Trichoptera* placed as the most "degraded" form (excepting *Podura*, &c.), notwithstanding their close affinity with the exalted *Lepidoptera*, an affinity which almost renders it questionable as to whether some Lepidopterous genera, *e. g.*, *Micropteryx*, *Nepticula*, &c., might not be grafted on to the *Trichoptera*, without much outraging either. To our mind, this arrangement is a striking example of the fallacy of any system, which, being linear, attempts also to be natural.

The importance of this work rendered it necessary to devote more space to its notice than is our custom; but the fact that 800 copies have been sold already, and that a new edition is in preparation, must outweigh anything we have said, or could say, in its favour.

TRANSACTIONS OF THE NORFOLK AND NORWICH NATURALISTS' SOCIETY, 1869-70.
—Norwich, 1870.

We have before us the first part of Transactions published by this Society, and a very creditable beginning it is, extending to over 60 pages. Of course all branches of Natural History are represented, as they should be, and Entomology is very fairly advocated by (1), a discursive paper by Mr. Crowfoot, conveying many useful hints on the way the study should be conducted; (2), a notice by Mr. Barrett "on the larva of an unknown Lepidopterous insect found in the barley crops of 1868," remarking on the damage done to the grain by some small, and as yet undetermined larva; and (3), some pertinent remarks by Mr. Southwell on the unusual abundance of Lady-birds last season, an extract from which will be found in another part of our present number.

ENTOMOLOGICAL SOCIETY OF LONDON, 2nd May, 1870. A. R. WALLACE, Esq., F.Z.S., President, in the Chair.

Mr. Higgins exhibited (for Mr. Hewitson) a collection of butterflies from Ecuador, collected by Manuel Villagomes, who was in the service of Mr. Buckley during his late expedition; Villagomes collected in a valley considerably to the south of the scene of labours of his former master. The collection consisted of 2000 specimens, and Mr. Hewitson described 22 new species.

Mr. F. Smith exhibited a Collection of Japanese *Hymenoptera*, sent by Mr. Lewis, of Nagasaki. Of the *Aculeata* there were 44 species, and of these about 20 appeared to be new. Taking it altogether, the collection was European in its facies and constitution.

Mr. McLachlan read "Descriptions of a new genus and four new species of *Calopterygidae*, and a new genus and species of *Gomphidae*." Among the former was a near ally of the brilliant *Chalcopteryx rutilans* (*C. scintillans*, McL., from San Paulo).

Mr. Crotch sent for exhibition *Trachyphlæus laticollis*, a *Curculionid* new to Britain, of which five specimens had been taken at Weston-super-Mare.

Mr. Müller exhibited some of the original drawings by Labram of the insects figured in Imhoff's "Insekten der Schweiz," &c.

Mr. Holdsworth, of Shanghai, sent a communication respecting the *Bombycidae*, &c., named by Mr. Walker, *Ceone punctata*, *Lasiocampa remota*, and *Lebeda hebes*. He reported that he had bred all three from larvæ which were undistinguishable; these latter fed upon pine and oak. The insects are very closely allied to the European *Bombyx pini*.

Mr. Bates read a paper "On a new genus and some new species of *Copridæ*," and exhibited specimens in illustration thereof.

Mr. Pascoe read "Descriptions of some new genera and species of Australian *Curculionidae*."

ON CERTAIN BRITISH HEMIPTERA-HOMOPTERA.

BY JOHN SCOTT.

Revision of the Family DELPHACIDÆ, and descriptions of several new species of the Genus *Delphax* of authors.

As the Vol. on the *Hemiptera-Homoptera* by Mr. Douglas and myself will not make its appearance for some little time, I have thought that probably it might be of assistance to those who are at work on these insects, if the results of our labours in certain groups down to the present time were laid before them as a kind of guide as I know well from experience how very difficult it is to determine any of the species, both through the indefinite manner in which they have been described, and their great similarity of facies. I think, however, that I have mastered the difficulties, and that the division of the genus *Delphax* of authors into sections, and the diagnostic characters following hereafter, will enable any one, after a little practice, to separate the species. The greater portion of the species composing this genus are of minute dimensions, and, by far the largest number occur only in an undeveloped form. This may probably have led earlier collectors to regard them only as "immaturities," and so they were passed over. Boheman was the first to do anything with these half-winged creatures, and, moreover, discovered that the developed and undeveloped forms of each species were very dissimilar, and that the outline of the genital segment of the male of each was different in shape (in mentioning the genital segment it is always to be understood that I refer to the terminal one) and Dr. Flor, acting on this hint in his *Rhyncoten Livlands*, vol. ii, describes, as well as can be done in words, the peculiarity of the form of the genital segment of every species known to him, both when viewed from the side and posteriorly. Still later, and with a greater depth of sagacity, Dr. Fieber observed that, in addition to this peculiarity of shape, the males of this same genus had certain styloid processes attached to the genital segment, and visible with the aid of a lens when viewed from behind (these processes are situate, and diverge more or less from, a little above the middle of the lower margin), and that each species had a form of process peculiar to itself. Since then, he has applied the same principle to the *Deltocephali*, and with a like result. Whether this peculiarity of structure in the males holds good throughout the whole of the *Homoptera*, or is only observable in certain sections, is to me as yet unknown, as I have only been able at present to investigate the species hereafter enumerated, and those of the genera *Cixius* and *Deltocephalus*; but I shall feel surprised if it is not the general rule.

In the Verhandl. d. k. k. zool. bot. Gesell. Wien for 1866, Fieber figures the genital segment, as seen from behind, showing the position and shape of the processes, of no fewer than 68 species of *Delphacide*; and, since that time, to my knowledge, he has added several others. Kirschbaum, in 1868, published a small volume on "*Cicadinen*," but I am sorry to say that it is almost incomprehensible. In many instances, the colour of the different parts of the insects is not given, and, moreover, I believe in a great number of cases that the same insect does duty under various names. Of Fieber's 68 species mentioned above, 2 are from Sarepta, 1 from Italy, 2 from the Pyrenees, 3 Spain and Portugal, 5 south of France, and 2 without any reference as to their locality; the remaining 53 may all be expected to be found in this country, in anticipation of which I append the following enumeration of the major portion of them, trusting that I may thereby excite greater enthusiasm in those who have already begun to collect, and raise up new workers in the field. Unlike the "pernicious bloodsucker of sleeping man," they are all warranted inodorous, and may be felt, but not smelt. The proper time for collecting them is between June and October, and by sweeping moist or marshy places by far the greatest number of species will be obtained.

The Family DELPHACIDÆ we divide into five genera, viz., *Asiraca*, *Delphax*, *Liburnia*, *Dicranotropis*, and *Stiroma*.

Genus 1—ASIRACA.

Face with two middle keels. *Antennæ* long, first joint foliaceous, transversely trigonate, second about one-third the length of the first. *Pronotum* with three indistinct keels. *Scutellum* with four longitudinal keels. *Elytra*, basal cell wanting. *Legs*, fore-thighs and tibiæ broad, foliaceous; posterior tibiæ with three spines.

Genus 2—DELPHAX.

Face with one middle keel, scarcely perceptible on the forehead. *Antennæ* long, first joint foliaceous, transversely trigonate, second two-thirds the length of the first. *Scutellum* with three longitudinal keels. *Elytra* with a short basal cell. *Legs*, fore-thighs and tibiæ not dilated.

Genus 3—LIBURNIA.

Crown variously shaped. *Face* with one middle keel, not distinctly furcate on the forehead, except in one or two instances. *Antennæ* not foliaceous, first and second joints somewhat cylindrical, first shorter than the second. *Scutellum* with three keels. *Elytra* generally only partially developed. *Legs* simple; hinder tibiæ with one upper and one lower spine.

Genus 4—DICRANOTROPIS.

Face with two middle keels, united at a greater or lesser distance from the base. All the other characters as in *Liburnia*.

Genus 5—STIROMA.

Face with two middle keels, sometimes somewhat indistinct. All the other characters as in the two former genera.

Genus 1—ASIRACA, Lat.

Asiraca clavicornis, Fab. This insect is rarely taken by sweeping, as it seems to be of retired habits, living at the roots of grass, &c. (see Ent. Mo. Mag., vol. vi, 162).

Genus 2—DELPHAX, Fab.

This is the genus *Aræopus* of Spinola, a name which has been generally adopted by later authors, but it cannot stand, because Fabricius had already characterized his genus *Delphax* from the species *crassicornis* (see Ent. Sys. supp., 522, 1). The *Delphax* of authors therefore requires another name, and we have adopted that of *Liburnia*, Stål (see next genus). As far as we at present know, we have but one species in this country, which was figured and described by Curtis, whose name it will bear; and, singularly enough, in the text relating to the plate, he says, “allied to *crassicornis*, Fab. and Panz., 35, 19,” a fact which has been hitherto overlooked, or considered of no value whatever. The following is the synonymy:—

DELPHAX PULCHELLA.

♂ *Asiraca pulchella*, Curt., 445, and plate (1833).

♀ *Asiraca dubia*, Curt., 445, 2 (1833).

Aræopus crassicornis, Marshall, Ent. Mo. Mag., ii, 31, 1 (1865).

Aræopus Minki, Fab., Verhandl. Zool. bot. Gesell., xvi, 522, 1 (1866).

It differs from *crassicornis* in having the basal cell of the elytra, and the space between the second and third longitudinal nerves only, black or brown; whereas in that insect the basal cell is white, and the entire space between the first and third nerves, as far, nearly, as the transverse nerves, black or brown. The shape of the processes attached to the genital segment is also different.

To be found not uncommonly by sweeping on the margins of the marshes around Lee, in August and September. The ♀ is very rarely found in the winged state.

Genus 3 — LIBURNIA, Stål.

(Hem. Afv., iv, 179 (1866).

Delphax, Auct.

A. Head elongate, more or less narrow, sides more or less parallel.

1 (2). Pronotum and scutellum side keels diverging more or less posteriorly, but reaching to the posterior margin.

a. Scutellum middle keel reaching to the apex.

Developed form, ♂. Clavus with a short black streak at its apex.

Undeveloped form. Yellow, sides of the pronotum, scutellum, and a streak on the elytra and sides of the abdomen, black 1. *notula*, Germ.

a a. Scutellum middle keel *not* reaching to the apex.

Developed form, ♂. Elytra black, clavus and anterior margin of the corium more or less yellow. ♀. Elytra yellow, with a more or less distinct black streak at the apex 2. *longipennis*, Curt.

Elytra yellow, with a more or less broad dark longitudinal streak.

Developed form, ♂. Genital segment fuscous or black .

3. *fuscovittata*, Stål.

Do. ♂. Genital segment yellow 4. *lineola*, Germ.

Cheeks with a large, round, black spot . . 5. *guttula*, Germ.

NOTE.—The head of the first four species is much longer than any of the following.

Undeveloped form of the four last species unknown to us.

Developed form, ♂. Abdomen yellow, genital segment posteriorly snowy-white 6. *Scotti*, Fieb. M.S. (n.s.).

2 (1). Pronotum side keels *not* reaching to the posterior margin, but curved outwardly at or beyond the middle of the disc.

b. Scutellum side keels parallel.

Developed form, ♂. Greenish-grey; abdomen black, genital segment yellowish-white 7. *smaragdula*, Stål.

Do. ♂. Green; abdomen and genital segment black . . .

8. *unicolor*, H. Schf.

Undeveloped form of the two last species bright green.

The different form of the genital segment of the ♂ of each of the following species, as seen from above, will be found to be of great assistance in separating them.

bb. Scutellum side keels diverging posteriorly.

* Keels of the head and face white.

Undeveloped form, ♂ ¶. Pronotum white, beyond the side keels a black patch almost concealed beneath the posterior margin of the eyes 9. *elegantula*, Boh.

¶ ¶. Pronotum and scutellum yellowish or pale brownish-yellow, keels of the former and middle keel of the latter white.

c. Middle keel of the face distinctly furcate before the apex.

Do. Head and face yellow, keels margined with black... 10. *collina*, Boh.

Do. Crown yellow, face between the keels black... 12. *distincta*, Flor.

Developed form of the three last species unknown to us.

cc. Middle keel of the face not distinctly furcate before the apex.

Developed form, ♂. Keels of the face margined with black... 11. *sordidula*, Stål.

¶ ¶ ¶. Pronotum and scutellum keels concolorous.

Undeveloped form, ♀. Face between the keels black.. 13. *Boldi* (n. s.).

** Keels of the head and face concolorous.

Developed form, ♀. Head, pronotum, and scutellum smoky-brown. Elytra pale brownish-yellow, nerves brown, distinctly granulated 14. *capnodes* (n. s.).

Undeveloped form, ♂. Head, face, pronotum, and scutellum yellow. Elytra fuscous-yellow, nerves distinctly granulated 15. *Signoreti* (n. s.).

Undeveloped form, ♂. Head, pronotum, and scutellum clear brownish-yellow. Face between the keels black... 16. *adela*, Flor.

Undeveloped form, ♂. Head, pronotum, and scutellum clear brown. Face, pronotum, and scutellum beyond the side keels, black 17. *melanopachys* (n. s.).

Undeveloped form, ♂. Head clear brown. Pronotum and scutellum fuscous-brown. Elytra smoky lacquer-yellow... 18. *venosa*, Germ.

B. Head quadrate.

I here give an outline of the form of the genital segment, when viewed from above, of the ♂ of the three following species, so that the value of the character to be thus obtained in separating such difficult species as *pellucida* and *discolor* may be seen.



1. *forcipata*. 2. *pellucida*. 3. *discolor*.

Undeveloped form, ♂. Black, shining. Elytra, along the scutellar region, yellowish19. *forcipata*, Boh.

Undeveloped form, ♂. Piceous, somewhat shining ... 20. *pellucida*, Fab.

Do. ♂. Pronotum and scutellum black. Elytra brown, marginal nerve whitish-yellow...21. *discolor*, Boh.

Pronotum generally whitish or yellowish-white.

Developed form, ♂. Elytra pale, almost transparent. Clavus with a short black streak at the apex ..22. *striatella*, Fall.

Do. ♂. Clavus *without* a short black streak at the apex... 23. *neglecta*, Flor.

Do. ♂. Elytra with a broad, curved, black streak at the apex 24. *speciosa*, Boh.

Exceedingly like a small *Delphax pulchella* (see preceding genus). On the Continent there is another species closely allied to ours (*basilinea*, Germ.).

1. Head, pronotum, and scutellum brown.

Undeveloped form, ♂. Elytra posterior margin almost truncate, with two white oblong spots, the nerves spotted with black, but not so prominent as in the next species25. *Fieberi* (n. s.).

Do. ♂. Elytra posterior margin rounded...26. *lepida*, Boh.

2. Head and pronotum brown Scutellum black, sides and apex more or less white.

Undeveloped form, ♂. Elytra black, scutellar and posterior margin white. Abdomen black. Genital segment, viewed from behind, black.....27. *leptosoma*, Flor.

3. Pronotum and scutellum white.

Undeveloped form, ♂. Elytra dark brown or pitchy-brown, scutellar region pale, posterior margin narrowly white. Abdomen black. Genital segment, when viewed from behind, greyish-white...28. *albofimbriata*, Curt.

This is an old manuscript name of Curtis, of which *apicalis* was the ♂ and this the ♀. Fieber in his list (Verhandl. K. K. Zool. bot.-Gesell. xvi, 534, 35) assigns it to Signoret; but this is an error, as that gentleman possesses types of both sexes, received from Curtis, the labels written in a lady's hand (most probably that of his daughter).

Undeveloped form, ♂. Elytra black, posterior margin white. Abdomen black, last segment above, and the genital segment, margined with white .. 29. *niveimarginata* (n. s.).

4. Head, pronotum, and scutellum entirely yellow.

Undeveloped form, ♂. Elytra black, with a purplish gloss, posterior margin very narrowly whitish-yellow. Abdomen yellow. Genital segment black...30. *pullula*, Boh.

Undeveloped form, ♂. Elytra black, with a purplish gloss, the whole margin narrowly and scutellar region broadly yellowish.....31. *lugubrina*, Boh.

Do. ♂. Elytra yellow. Abdomen black.

32. *denticauda*, Boh.

5. Head and pronotum yellow.

Undeveloped form, ♂. Scutellum black. Abdomen black. Genital segment yellow 33. *Dalei* (n. s.).

6. Head, pronotum, scutellum, and elytra yellowish or greyish-yellow.

Undeveloped form, ♂. Abdomen black, a dorsal line and three or four longitudinal rows of streaks on the sides, yellow. Genital segment above yellow...34. *cognata*, Fieb.

Do. ♂. Abdomen and genital segment entirely black...

35. *exigua*, Boh.

Undeveloped form, ♀. The space between the keels on the crown, face, and clypeus smutty or black, keels of the two latter yellowish-white. Elytra sordid yellow, distinctly granulated. Abdomen sordid yellow, the margins of the segments more or less broadly black 36. *uncinata*, Fieb.

We have not as yet met with the ♂ of this or the next species. The ♀ most nearly resembles that of *pellucida* or *discolor*, whilst the ♂ (according to Fieber's outline) may be known by the genital segment, as seen from above, somewhat resembling that of *forcipata* (see sketch).

Undeveloped form, ♀. Face, from the base almost to the forehead, and clypeus black, keels yellow. Elytra pale and transparent, as long as the abdomen. Abdomen whitish-yellow, two or three segments at the base on the sides margined with black...

37. *obscura*, Boh.

Not unlike the undeveloped ♀ of *neglecta*, but larger and clearer in colour.

C. Head transverse.

Undeveloped form, ♂. Crown yellow. Face black, between the keels spotted with white. Elytra dark brown. Abdomen piceous, genital segment above paler...

38. *Douglasi*, Fieb. M.S. (n. s.).

Developed form, ♂. Head, pronotum, and scutellum yellow. Pronotum more or less brown towards and at the apex. Elytra with a very pale lavender hue, nerves distinctly and somewhat remotely spotted with dark brown; apex with a curved brown band, its inner margin divided into rays, which run along the longitudinal nerves to the marginal nerve; apex of the clavus with a short black streak.

Undeveloped form, ♂. Elytra not covering half of the abdomen, anterior portion whitish, posteriorly with a broad brown band, nerves spotted as in the developed form ..

39. *limbata*, Fab.

Exceedingly common in damp places in the latter form amongst rushes, &c. This is the *pictipennis* of Curtis.

Developed form, ♂. Head brown. Face black, with two transverse white patches on each side of the middle keel. Pronotum dark brown, side keels and posterior margin more or less greyish. Scutellum black, middle keel generally brown. Elytra pale, nerves brown; along the inner margin a more or less broad, smoky streak.

Undeveloped form, ♂. Head yellow. Face as in the developed form. Pronotum and scutellum grey, outer angles of both and a streak along each side of the middle keel of the latter brown. Elytra pale, covering more than half of the abdomen. Abdomen black, more or less broadly yellow above ... 40. *lineata*, Perris.

D. Head pentagonal.

Undeveloped form, ♂. Head, pronotum, scutellum, and elytra white or faintly yellowish. Abdomen deep glossy black, the two last segments margined with snow-white. Legs black..... 41. *mesomelas*, Boh.

DESCRIPTIONS OF NEW SPECIES OF DIURNAL LEPIDOPTERA FROM
MADAGASCAR.

BY CHRISTOPHER WARD.

PIERIS ANTSIANAKA, *n. s.*

Male. Upper-side. Anterior wing white, a small black spot at extremity of cell, a larger black spot between first and second discoidal nervules. Apex black.

Posterior wing entirely white.

Under-side. Anterior wing white, with base broadly marked with orange. Black spots as on the upper-side, but more clearly defined and with two additional, near the anterior margin.

Posterior wing entirely white. Expanse $2\frac{2}{10}$ inches.

Allied by its plumule to *P. Hedyde*, but quite distinct in appearance.

EREBIA RAKOTO, *n. s.*

Upper-side. Brown. Anterior wing with black ocellus near the apex, containing double white eye.

Posterior wing with two small ocelli, which are confluent, and near the anal angle.

Under-side. Brown. Anterior wing with ocellus as on upper-side, and placed on a band of greyish-white.

Posterior wing broadly marked on inner margin with greyish-white, which is continued as a band across the wing, and upwards in a narrow streak to the anterior margin. Two small ocelli near the anal angle. Expanse $1\frac{4}{10}$ inches.

EREBIA ANKARATRA, *n. s.*

Upper-side. Rufous-brown, changing to brown at the margins. Anterior wing: black ocellus with white eye near the outer margin, a smaller one above near the apex.

Posterior wing: two small ocelli near the posterior margin.

Under-side. Brown, with numerous small waved markings of a darker shade. Anterior wing with ocelli as on the upper-side.

Posterior wing with a row of six ocelli, bordered on the inner side with a narrow waved line of darker brown. The three upper ocelli are the smallest, the fourth and fifth the largest. Expanse $1\frac{6}{10}$ inches.

MYCALESIS VOLA, *n. s.*

Male. Upper-side. Brown. Anterior wing with two ocelli, upper one near apex, very small, lower one near centre of wing, much larger; the outer ring rufous-brown.

Posterior wing with a small black ocellus with white eye near the outer margin.

Under-side. Brown. Both wings crossed by an oblique, clearly defined yellow band. Anterior wing with ocellus as on the upper-side.

Posterior wing with small ocellus near the upper margin, and touching the inner side of the yellow band. Expanse $1\frac{1}{2}$ inches.

MYCALESIS ANKOVA, *n. s.*

Male. Upper-side. Brown. Anterior wing with large ocellus near the centre, outer ring orange, a smaller one at the apex.

Posterior wing with two small ocelli near the posterior margin.

Under-side. Light brown. Anterior wing with ocelli as on the upper-side.

Posterior wing crossed midway by an oblique band of darker brown.

Expanse $1\frac{1}{2}$ inches.

MYCALESIS IBOINA, *n. s.*

Male. Upper-side. Brown. Anterior wing as in *Ankova*.

Posterior wing: the margin undulating, and a lighter brown, edged on the inner side with dark brown; one small ocellus in centre of wing.

Under-side. Both wings crossed obliquely with a broad band of grey-brown, and with numerous small waved markings of darker brown. Anterior wing with one ocellus, which loses its yellow on the upper-side.

Posterior wing without ocelli. Expanse $1\frac{5}{10}$ inches.

MYCALESIS AVELONA, *n. s.*

Male. Upper-side. Brown. Anterior wing: midway near the outer margin an ocellus, black with white eye, and broadly surrounded with orange, which extends upwards to the extremity of discoidal cell.

Posterior wing angular; the margin strongly dentate and bordered with a narrow band of light brown. A large tuft of hairs at base of wing.

Under-side. Light brown, with a number of small waved markings of darker brown, and crossed vertically by a yellow band. Anterior wing with two ocelli, the upper one very faint, the lower one united to the yellow band.

Posterior wing with narrow band of yellow edged with black, following the outer margin. Two small black spots separated by a red spot, at the anal angle. Expanse 2 inches.

A very distinct species, remarkable for the angular form and dentate margins of the lower wings.

I have recently received the above seven species from Mr. Alfred Crossley, my collector in Madagascar.

Halifax: June, 1870.

ON A NEW GENUS & SPECIES OF *CARABIDÆ* ALLIED TO *CARABUS* PROPER.

BY H. W. BATES, F.Z.S.

Among the zoological collections lately brought home by Mr. Swinhoe, our Consul at Amoy in China, was a small series of Coleopterous insects (unfortunately in a rather dilapidated condition) from the neighbourhood of Pekin. One of the species turns out to be an interesting new form, at first sight appearing like a *Carabus*, and without anything especially attractive in its appearance, but, on examination, proving to be a new genus, closely allied to the Chinese and Japanese groups *Damaster* and *Coptolabrus*. In the form of the head and thorax, however, the insect is totally dissimilar from the two genera just named. The thorax is much broader than long, and has no trace of lateral angulation or sinuation behind the middle; but the head and mandibles may be considered as essentially the same as in *Damaster*, with the difference that they are very greatly diminished in length and increased in width and thickness. Together with this formation is combined a sinuate labrum, deeply sunk between the base of the mandibles. The elytra offer no trace of prolongation of the sutural apex. An essential character in distinguishing the genus from *Coptolabrus* may be also especially mentioned—the great relative length of the penultimate joint of the maxillary palpi. This character can be stated only of the female, as the maxillary palpi are unfortunately deficient in the male example, and the labial in both male and female. The mentum has no tooth in its emargination.

CATHAICUS, nov. gen.

Elongato-ovatus. Caput cum collo crassum, mandibulis dilatatis, suprâ late sulcatis, intus medio grosse dentatis; mentum sine dente. Thorax transversus, lateribus rotundatis, postice haudquaquam sinuatis. Elytra apice rotundata.

Elongate-ovate in form, like certain species of *Carabus* (e. g., *C. croaticus*), but of different facies, owing to the peculiar form of the head and thorax. Head longer than the thorax and nearly as broad, especially in the female, in which the head is

twice the bulk of that of the male ; widening in front of the eyes, neck very broad and thick : eyes not projecting beyond the lateral margin of the head. Labrum deeply sunk between the base of the mandibles, sinuate on its front edge. Mandibles of great size and strength ; dilated at the base beneath, the lateral groove (which is transversely strigose) being thus thrown on the dorsal face ; the inner edge dilated about the middle into a broad tooth, thence tapering to the apex, which is not very acute or falcate, the tips crossing. Inner maxillary palpi excavated within near the apex, as in *Damaster* and *Coptolabrus*. Mentum without tooth. Palpi securiform, terminal joint of the maxillary much shorter than the penultimate (rest wanting). Antennæ slender, setaceous, reaching but little beyond the base of the elytra, basal joints not compressed. Thorax short, sub-quadrate, broader by one-third than long, narrowed behind, sides rounded ; lateral margins scarcely dilated. Elytra sculptured as in *Damaster*, but more coarsely ; elongate-oval, apex rounded. Legs similar to those of *Carabus*. Three joints of the anterior tarsi of the male dilated, flattened above, and furnished with a dense brush of short hairs beneath.

CATHAICUS SWINHOEI, n. s.

Niger, sub-opacus, capite thoraceque subtiliter dense punctatis ; elytris utrinque tuberculis minutis sub-æqualibus in seriebus circa 15 ordinatis, interstitiis minutissime scabrosis, opacis.

Black, with a slight bluish tinge, scarcely shining. Head minutely and thickly punctured, forehead with a large and deep central depression. Thorax, in the ♀, much broader in front and less rounded on the sides than in the ♂ ; in the ♂, sub-quadrate, rather more narrowed behind than in front ; sides in both sexes very narrowly margined ; anterior angles closely applied to the sides of the neck, posterior angles slightly produced and obtuse, surface finely punctulated. Elytra elongate-oval, slightly depressed in the middle, much more convex posteriorly, and abruptly declivous towards the apex ; surface of each with about fifteen rows of small, sub-quadrate shining elevations, the interstices rugose-opaque, varied with minute granules. Body beneath, and legs, shining.

Length 14 to 15 lines. Hab. : Pekin.

One pair (♂ and ♀) from the neighbourhood of Pekin ; brought home by Mr. Consul Swinhoe, to whom all branches of zoology are so much indebted for his researches in China, and in the islands of Formosa and Hainan.

London : June, 1870.

DESCRIPTION OF A NEW SPECIES OF *BYTHINUS* FROM GREAT BRITAIN.

BY E. C. RYE.

BYTHINUS GLABRATUS, sp. n.

Rufo-testaceus, fere lævigatus, pube longiore parcius vestitus ; antennarum articulo basali cylindrico, elongato ; pedibus tenuibus, tibiis posticis elongatis, apice intus paullo incurvatis.

Maris (?) pedes paullo crassiores. Long. corp., vix $\frac{2}{3}$ -lin. (Anglic.).

Entirely testaceous-red (with the exception of the eyes, which are black, and very small), very shining, and thinly clothed with scattered long yellowish hairs. *Head* rather narrow and elongate, with the vertex elevated, smooth, and exhibiting the trace of a linear depression in the middle of the base, and (viewed from the front) a shining Y-shaped depression in the middle reaching from just below the eyes to the insertion of the base of the antennæ,—the parts near this depression being obsoletely roughened. *Antennæ* rather slender, with the basal joint almost cylindrical (rather narrowest at the base) and almost as long as joints 3—8 taken together; 2nd joint rather narrower than 1st, as long as 3 and 4 together, with no perceptible peculiarity of structure; 3—9 gradually getting transverse; 10 and 11 forming a club, the apical joint being oval-conic. *Maxillary palpi* somewhat as in *B. Curtisii*, but with the apical joint not so long or so broadly securiform, and with the basal joint rather more curved and not so abruptly thickened towards the apex. *Prothorax* cordate, rather wider at its upper third than the head, thence rather straightly narrowed behind; elevated, smooth, and very shining in front, with a large shallow fovea on each side below the middle, reaching the lateral margin and connected across the base of the thorax by an impressed curved line. *Elytra* with the sides gradually widened and rounded from the base to the outer posterior angle, and with the usual humeral plica and sutural stria, but not quite so elevated or laterally rounded as is usual in the genus, and with only a few obsolete traces of punctures. *Abdomen* smooth and shining. *Legs* elongate and slender; with the femora slightly thickened and the anterior and intermediate tibiæ slightly thickened on the outer side below the middle: the posterior tibiæ are considerably longer than the others, and are slightly thickened and curved inwards towards the apex.

Three specimens of this very interesting species were taken by Messrs. F. H. and E. A. Waterhouse at the end of the summer of 1865 in a mossy hollow on the chalk on Seaford Downs, in common with *Trichonyx Mærkelii* and a small yellow *Myrmica*. It is rather larger than *B. securiger* or *Burrellii*; but its shining appearance, light colour and want of punctuation, and the long basal joint of its antennæ, at once remove it from any species to the description of which I can obtain access. M. Chas. Brisout de Barneville, to whom I have communicated it, returns it as utterly unknown at Paris.

Capture in Britain of Bembidium quadripustulatum, Dej.—I have lately had the good fortune to capture a small series of this very distinct species. It is allied to *B. quadrimaculatum*, and intermediate in size between that species and *B. quadriguttatum*, from the former of which it differs in its superior size and darker legs, and in its antennæ being black from the base.

I found this handsome *Bembidium* at Bearsted, near Maidstone, in a wet place, which also produced me one specimen of the rare *B. Sturmii*.—HENRY S. GORHAM, Bearsted Vicarage, June 18th, 1870.

Capture in Northumberland of Cryptophagus fumatus, Gyll., a species new to the British List.—I have succeeded in finding a local specimen of what I think is the true *Cryptophagus fumatus*, Gyll.; Erichson, *Insecten Deutschlands*, iii, 363. The specimen is a male, which in its colouring and general form curiously simulates (as Erichson notes) a large *Corticaria*. In the form of the elytra, colour of pubescence and size, this insect is most closely allied to the recently introduced *C. validus*, Ktz. (*Ent. Mon. Mag.*, vii, 9); from which it differs especially in having the thorax more nearly quadrate, with the anterior tooth more developed (sub-cyathiform, and somewhat suggestive of the anterior tooth of *C. acutangulus*): from *E. cellaris* its differently shaped thoracic anterior tooth and elytra, and its short golden pubescence, which is not disposed in striæ, will separate it at a glance.—THOS. JNO. BOLD, Long Benton, Newcastle-on-Tyne, June 4th, 1870.

[Mr. Bold has kindly allowed me to examine the insect above mentioned, which is in my opinion also undoubtedly the true *C. fumatus*, Gyll.—E. C. R.]

Note on the Hydrochus parumoculatus of Hardy.—In preparing a revision of the Catalogue of Coleoptera of Northumberland and Durham, I have found it necessary to examine many local species, the claims of which to be considered indigenous might be thought doubtful. Amongst several others kindly sent to me by Mr. Hardy for that purpose, was his type of the above insect, which, after a careful examination, I was led to think was one of the *Elmidæ*, and closely allied to the recently introduced *Macronychus 4-tuberculatus*. Not finding any description at all agreeing with Mr. Hardy's insect, I forwarded it to Mr. G. R. Crotch, who at once endorsed my opinion, and has kindly favoured me with the following re-description and remarks.

"*Macronychus* (?) *parumoculatus*, Hardy, *Trans. Tyneside Nat. F. Club*, ii, 270; *Cat. Ins. North. and Dur. Col. (App.)*, p. 242 (*Hydrochus*).

Brunneus, tibiis tarsisque pallidis; thorace elongato, antice producto, paullo ante apicem fortiter constricto, disco inæquali, sat fortiter punctato; elytris fortiter striato-punctatis, punctorum seriebus 8, interstitiis 2° 5°que fortiter carinatis, postice conjunctis; tarsis posticis tibiæ longitudinè æqualibus. Long. 1½-lin.

Described by Hardy as a *Hydrochus*, but clearly one of the *Elmidæ*, and nearest in form to *Macronychus*, with which it agrees in the structure of its tarsi, &c., though the antennæ are 11-jointed. From *Ancyronyx* it is removed by its head, which is constructed precisely as in *Macronychus*."

Many of Mr. Hardy's insects were collected and mounted by his younger brother and another boy; and the one above described was found standing amongst the specimens taken in the vicinity of Newcastle: more of its history he could not learn.—ID.

Note on varieties of British Coleoptera.—Among some beetles taken at Lewes by Mr. G. H. Verrall, I find a few specimens of a race of *Hydrobius fuscipes*, Linn., which I do not remember to have seen noticed in this country, if they be not the *H. subrotundus* of Steph., Ill. Mand., ii, 128, Manual, 90, with which in certain points they agree. Compared with typical *fuscipes*, these insects are shorter, broader and more globose, with shorter legs and tarsi, the elytra not so evidently crenate-striate, and with no larger irregular punctures in the alternate interstices. Among the few specimens above referred to are some affording traces of transition to the type form. Dr. Sharp, to whom I communicated these examples, tells me that he also has observed the existence of this race, both in Great Britain and Spain.

I also have in my collection a specimen of another var. of the same species, taken at Barnes, and which I refer to the *H. æneus* of Solier, Ann. Soc. Ent. Fr., iii, 1834, 314; conspicuous from its bright metallic green colour and light legs (it is quite mature). Erichson (Col. March., 1839) refers to this var., which seems certainly identical with the prior *H. chalconotus* of Leach (1814) and Steph. Mand. ii (1829), 128.

H. subrotundus and *chalconotus* are quoted in Wat. Cat. as synonyms (not vars.) of *H. fuscipes*.

Among a number of *Anchomenus versutus*, Sturm, recently taken by me at Wimbledon, I find a few of a deep black colour, which are, I presume, to be referred to the *A. lugubris* of Duft., quoted by Schaum as a form of *A. versutus*, of which they preserve the characteristic delicate build, short thorax, flat interstices, and short and thin antennae and legs.—E. C. RYE, 10, Lower Park Fields, Putney, S.W.

Centhorrhynchus vicinus, Brisout.—M. Brisout informs me that this insect is the *C. triangulum* of Märkel and Schönherr, according to Germar's type.—ID.

"The Fly" and "The Flea."—Those interested in hop growing are just now discussing the ravages of two pests under the above titles. "The Fly" is well known to be an *Aphis*; but I do not think it is so well known that "The Flea" is a small beetle, *Psylliodes attenuatus*, Ent. II. I know not whether other species of the *Halticidæ* feed on the hop; but this is the one that does the damage hereabouts.—HENRY S. GORHAM, Bearsted, Maidstone, June 18th, 1870.

[I believe that most of the functions of life are performed by all the *Halticidæ* "on the hop."—E. C. R.]

Something like reflection in Centhorhynchus sulcicollis, Gyll.—Having some time ago followed up the life history of *Centhorhynchus sulcicollis*, in order to form an independent judgment on the various accounts published, I had the pleasure of observing the following little fact, which may be worth while mentioning.

Finding that excursions from the cocoons generally took place in the evening, or at night, I often placed a series of cocoons on a white sheet of paper before me on my working table.

Now, as a rule, after breaking open the cocoons in an irregular fashion, the beetles clambering out as best they could, at once tried to make their escape; or, if arrested, shammed death instantly, after the most approved weevil manner, but

one little fellow which I stopped first at a distance of about two inches from its deserted cocoon by the touch of my pencil, after shamming death for a few minutes and trying again to get away in the same direction, when my breathing over it caused it to mimic a pellet of earth for the second time, to my great astonishment, turned right round after a short rest, and nimbly crawled back to its own cocoon, and entered it. Turned out again, and left at the same distance from its home, it was not long in retracing its steps into the same cell, where it remained motionless for the next four hours, without stirring out again. And there I left it, as it was getting late.

The conclusions I draw from this single fact may be based upon insufficient evidence, but I do not shrink from stating them. They are, firstly—that instinct is hereditary as proved by the beetle using its power of shamming death almost instantly after its first extrusion; and secondly—that apart from this power it possessed the faculty of will, as it tried a distinct plan of safety when the usual means of protection failed.

An unbroken, even surface lay all round; the beetle meant to escape; obstacles arose; hereditary instinct tried to met them, but owing to changed surrounding conditions, it signally failed in doing so. Now what did occur: this little creature did exhibit a plain proof of possessing a spark of what proud man is apt to term his “god-like reason,” by getting the better of its instinct for its own welfare’s sake.

The enormous chasm separating man’s will and insect volition will probably never be bridged over; but it is not derogatory to the true dignity of our race humbly to confess, that the difference, however great, is not absolute, but one of degree, because, even with our will-force in its most concentrated state, we cannot climb to the top of the ladder, but must content ourselves with the conception of a fountain head of volition, as infinitely incomparable to our own will as eternity is to time.—ALBERT MÜLLER, South Norwood, S.E., May 15th, 1870.

Capture of Strophosomus hirtus, Schön., Walt.—In the spring of 1868, I purchased some early primroses wrapped up in moss, the latter having evidently been gathered at the same spot as the flowers, and bound round their roots to keep them moist. It occurred to me to loosen this binding, and shake it well over paper; and, having done so, I succeeded in finding (besides several commoner species) a fine fresh specimen of *Tropi(do)phorus carinatus*! This year, I thought I would try my luck again; and accordingly, early in April, the weather being cold at the time, I invested sixpence: now, although it may have been true enough, as regards Peter Bell (who, as I presume, was no Coleopterist) that

“A primrose at the river’s brim
A simple primrose was to him,
And it was nothing more?”

yet it turned out considerably more to me; for careful search of the roots and moss produced one small beetle, quite unknown, but which, after some trouble (very few collections containing the insect) was identified by Messrs. F. Smith and C. O. Waterhouse, of the British Museum, as the *Strophosomus hirtus* of Schönherr and Walton (= *Platytarsus setulosus*, Schön., Seidlitz; Ent. Ann., 1869, p. 46).—W. G. PELERIN, 10, Hertford Villas, Montague Road West, Dalston, June, 1870

Re-occurrence of Triplax Lacordairii at Darenth Wood.—I have, in the early part of this summer, again taken *Triplax Lacordairii* at Darenth Wood in fungus, as before.—G. C. CHAMPION, 274, Walworth Road, S.E.

[This insect has also occurred to Dr. Power and Mr. O. Janson, at the same place.—Eds.]

Occurrence of Cordulia metallica, Van der Lind., a Dragon-fly new to Britain.—No sooner is the "Catalogue of British Neuroptera" published, than I have to record an important addition, and which, but for an oversight, would have been inserted in its proper place. It is *Cordulia metallica*, of which a series of males were taken by Dr. F. Buchanan White in Strathglass, Inverness-shire, last year. Wanting duplicates of *C. arctica* for a continental friend, I asked Dr. White to obtain some for me. He did not visit Rannoch, the locality in Scotland for that species, but sent up several insects from Strathglass, which he imagined to be the same species, and as such they remained with me for some time without examination. In fact, I had sent over all but one example before becoming aware of the mistake. The species is allied to *arctica*, but more robust, the abdomen broader, the face with a broad transverse yellow band, the appendices of the male without internal teeth, and the wings of the female (of which I have not yet seen a native example) with a broad yellowish costal margin. It had already been considered as British, I believe by Van der Linden himself, but on the authority only of a bad figure in Harris' "Exposition of English Insects," which is probably intended for our more common species, *C. aenea*.

There is no reason why we should not possess in Britain all the European species of *Cordulia*. *C. aenea*, L., is widely distributed throughout these islands, but local; *C. metallica*, V. d. L., is now recorded as Scottish (widely spread over Europe); *C. alpestris*, Selys, occurs in Lapland, Austria, and the Alps, and ought to be found in Scotland; *C. arctica*, Zett., found at Rannoch, in Scotland, and Killybegny, in Ireland, is like the last, an alpine or boreal insect; *C. Curtisii*, Dale, found in the New Forest and Dorsetshire, in a southern form, not occurring again till we reach the south of France, and the Iberian Peninsula; *C. flavomaculata*, V. d. L., has not been seen here, but is widely distributed on the continent.—R. McLACHLAN, Lewisham, 8th June, 1870.

Note on Dimorphism of American Cynipidæ, &c.—The following extracts from a letter I have lately received from Mr. Homer F. Bassett, of Waterbury County, U. S. A., may present some interest. Mr. Bassett writes:

"My own observations tend to confirm the theory of Dimorphism; and the day is not far off when the unisexual species will be correctly referred to their bisexual progenitors. The gall (on a species of oak) of which I send you a sketch was gathered a few days since (March, 1870), and I find it filled with perfect gall-insects, only their wings are not fully developed, though in them the peculiar venation is plainly seen. But all I have cut out of these galls are females; their abdomens are full of eggs, and they are, I have no doubt, the dimorphic form of an undescribed *Cynips* that was found in countless numbers in galls on the petioles of the leaves of the same tree last June. I reared many hundred of them last summer, and I am waiting patiently till this spring generation shall appear, to learn—first, if it will contain any males; secondly, to compare them carefully with the June

"brood. You are, no doubt, aware that among our sub-apterous species "none but females are found. Is this the case among European species? If so, "is not the presumption strong, that they are dimorphic forms of winged bisexual "species? I do not despair of yet being able to settle this question, for a very "large proportion of North American species yet described are found more or less "abundantly on the twelve or fourteen species of oak that grow in this vicinity."

The questions raised by my correspondent apply to some extent equally well to the British *Cynipidæ*.

By far the greater part of the latter have been described by the Rev. T. A. Marshall, in the pages of this Journal, yet much remains to be done concerning the history and appearance of successive broods of even our commonest species; and it is to be desired that some observer, living in the country and with plenty of leisure at his command, would take the trouble of carrying out a series of closely watched experiments on a large scale, and extending over various seasons, as such continued experiments can alone give us "more light" about dimorphism, and the rôle the seldom occurring male element plays in the propagation of hymenopterous gall-flies.—ALBERT MÜLLER, South Norwood, S.E., May, 1870.

On the occurrence of Andricus curvator, Hartig, in Britain.—To my knowledge, the credit of first breeding British specimens of this *Andricus* is due to my friend Mr. H. W. Kidd, of Godalming, who sent me specimens of it a year ago. Shortly afterwards I bred it myself from what Mr. Kidd terms the "kidney-shaped gall" of the oakleaf. This gall consists of a thick swelling of any one of the ribs of the oakleaf, projecting above and beneath and forming a large cell, to the interior of which one or two reniform, first whitish and afterwards chestnut-brown, thin small papery cases are found loosely attached by one end. In this reniform case the larva is hatched and passes its whole metamorphosis, the imago making its escape by piercing first the case and subsequently the outer green shell of the gall.

I append Hartig's description; (German's Zeitschrift, 2, p. 191, 5.) *Niger; antennis fuscis, basi pallidioribus; pedibus testaceis, coxis, femoribus posticis latere interiore plus minus nigris.*—Long. lin. 1. ♂. ♀.

I may add that some of my specimens have had the benefit of being examined by the Rev. T. A. Marshall.—ID.

Synonymic notes on some species of Cecidomyia.—I think it best to bring forward the following synonymical notes separately, so as not to have to introduce the matter into the projected list of British galls.

Cecidomyia veronicæ, Bremi.

Bremi, Beiträge, etc., 1847, p. 49, 6.

Loew, Die Gallmücken, Pr. d. Pos. Gymn., 1850, p. 37, 41.

Winnertz, Beitrag, etc., Linnæa Ent., 1853, p. 237, 24.

=*Cec. chamædrys*, Inchbald. Ent. W. Intelligencer, 1860, Vol. 8, p. 196.

The larvæ form the tufts of woolly leaves on *Veronica chamædrys*.

Cecidomyia millefolii, Loew.

Loew, ut supra, 1850, No. 46.

=*Cec. achilleæ*, Inchbald, ut supra, 1860, Vol. 8, p. 195.

The larvæ inhabit calyx-shaped galls in the axils of the leaves of *Achillea millefolium*.

Cecidomyia floricola, Winnertz.

Winnertz, *ut supra*, 1853, p. 289, 78.

=*Cec.* —, Inchbald, *ut supra*, 1860, p. 164, œconomy.

The larvæ inhabit the flower tufts of *Achillea ptarmica*, which they transform into woolly galls.—ID.

Deilephila livornica at Folkestone.—Whilst rambling in the Warren yesterday afternoon, a working geologist named Griffiths brought me an example of this rarity, which he had just then picked up on the shore. The creature (a ♂) was imprisoned in a capacious basket, and being rather lively, I had some difficulty in securing it, but eventually managed to get it into a large chip box, and to stifle it with tobacco smoke before much damage was done. Griffiths informs me that when he first saw the insect it was out at sea, flying straight towards him, and that as soon as it reached land it dropped, as if “dead beat.”—H. G. KNAGGS, Folkestone, May 27th, 1870.

Deilephila livornica in South Wales.—Perhaps it may be interesting to some of your readers to know that a magnificent specimen of *Deilephila livornica* was given to me on Sunday morning last (May 22nd). It was taken at rest on a bank a few yards from our own garden.—ERNEST KAYE, Laugharne, Carmarthenshire, S. Wales, May 23rd, 1870.

Deilephila livornica in Dorsetshire.—In a letter received from the Rev. O. P. Cambridge, of Bloxworth, he remarks that he had lately seen three specimens of this insect. On two occasions he had no net with him; on the other he had, but missed the insect. Two of them were sucking at the blossoms of the Lousewort.—F. BOND, 203, Adelaide Road, N.W., June, 1870.

Deilephila livornica at Waltham Abbey.—A specimen of this insect has occurred in the above locality, concerning which Mr. Davis gives the following particulars. It was captured by Mrs. G. Blount on the 26th April, at rest on a shed at the back of the house at Paradise Row, and is now in the possession of Mr. Blount.—W. C. BOYD, Cheshunt, 16th June, 1870.

Deilephila livornica at Teignmouth.—Mr. Brooks, surgeon, of Shaldon (about a mile from this place), shewed me yesterday a specimen of *D. livornica* which had been brought to him by a boy, who said he had found it at Shaldon about a week since. It was alive when the boy brought it, and the wings were set out with pins when I saw it. It seemed to have been injured in capturing, but otherwise was not a worn specimen, though it must have hibernated.—W. R. HALL JORDAN, Teignmouth, 25th May, 1870.

Deilephila livornica at Birmingham.—An example of this insect was caught by a boy, at 5 p.m., on the 24th May. He found it on a vine leaf, the branches of which overhang a wall; and, knowing a friend of his who is a collector, took it to him. I had the pleasure of seeing it alive the same evening; it is a splendid female, and had only just emerged from the pupa.* On the 30th May another female was captured at Bromsgrove, about ten miles from here, by a man who was cutting cabbages; this one has laid a few eggs.—FRED. ENOCK, 75, Ryland Road, Edgbaston, Birmingham, 1st June, 1870.

* We believe all the specimens of *livornica* captured in spring have hibernated.—EDS.

Chærocampa nerii at Birmingham.—I have a ♂ example of this insect in my possession, the circumstances of the capture of which are as follows. A few days since I called on my friend Mr. Franklin, taxidermist, after an interval of some time, to see if he had had anything brought to him lately. He showed me a very worn ♂ of *nerii* which a young woman had brought to him some time ago. She said her brother caught it in their garden during the autumn of 1869, and after showing it to their friends, put it in a box and forgot all about it till three months since, when of course it was dead, and she took it to Mr. Franklin to see if he would give her anything for it. When the box was opened it was full of "fluff," and the insect much damaged at the tips of the wings, both antennæ and nearly all the legs broken off; it had never been pinned. There was not the slightest attempt at deception in the matter.—ID.

Capture of Acronycta alni at Hampstead.—During an evening's collecting in Bishop's Wood, Hampstead, on the 21st May last, I was fortunate enough to secure a very fine male example of this rare species; believing the insect to be new to the locality, I think a note of it will interest your readers.—JAMES L. COURTICE, 22, College Street West, Camden Town, N.W., June 10th.

Sesia philanthiformis in Scotland.—I have the pleasure of being able to place this species on the Scottish list, having found the larvæ and pupæ in the stems of *Statice armeria* in this neighbourhood.—F. BUCHANAN WHITE, Rockeliff, Colvend. Dalbeattie, June 8th, 1870.

Eudorea atomalis at Witherslack.—Last July I took this species for the first time at Witherslack. As far as I know, it had previously only occurred at Raunoch, in Perthshire. The species has been named for me by Dr. Knaggs.—J. B. HODGKINSON, Spring Bank, Preston, May 25th, 1870.

Depressaria pallorella, &c., in Sussex.—During the last month I secured about two dozen specimens of this species in a rough field near Tilgate Forest, in Sussex, the same locality in which I captured two specimens some years ago. I also met with *Aleucis pictaria*, *Teniscampa leucographa*, *Hopforina croceago*, *Xylina semibrunnea*, &c.—E. G. MEEK, 4, Old Ford Road, Bow, E., May 2nd, 1870.

Early butterflies—The season is considered very backward, and in the New Forest the foliage is, I am told, less advanced by fully a month than it was at this time last year; yet, on the 7th inst., I found *Leucophasia sinapis*, *Argynnis Euphrosyne*, and *Thecla rubi*, all out near Lyndhurst. The appearance of these butterflies, when the oaks showed no sign of leaf, and even the hawthorns were but half out, appeared to me rather curious, as the causes which retard vegetation are considered to produce the like effect upon insect life.—W. A. LEWIS, Temple, May 17th.

Note on Peronea potentillana, Cooke (*comariana*, Zeller?).—I notice in the Annual mention made of the above insect, and I trust you will excuse me for writing to you respecting it. First let me observe that Professor Zeller's remark, "I doubt whether the larva would accommodate itself to *Fragaria* except in captivity," seems to me to be at variance with his conclusion that *comariana* and *potentillana* are one species. I do not dispute their being so, but according to my

experience, the Professor is certainly wrong in doubting that *Fragaria* is the food of *potentillana*. I have been looking through my memoranda, and find therein recorded my first capture of *potentillana* on the 23rd June, 1850. The insect was flying in some numbers over a strawberry bed in my father's garden near Liverpool. The insect being submitted to Mr. Doubleday, he gave it as his opinion that it was the summer brood of *camperana* or *Schulleriana*; but when I found the imago appearing again in September in the same place, and that the two broods were exactly alike, and about equal in point of numbers, I felt convinced that it was a distinct species. The habits of the insect have been pretty well known to several of our Lancashire collectors for many years.

Potentillana is a most variable insect, and indeed, I would not now undertake to separate some specimens of it from *caledoniana* if mixed up with that species.— BENJAMIN COOKE, Stockport Road, Manchester, March 28th, 1870.

[The Hon. Thomas de Grey informs me that he breeds the *P. proteana* of Doubleday's list in abundance from *Comarum palustre*. He has never observed it on *Fragaria*. Mr. de Grey believes he has specimens of a species intermediate between *proteana* and *Schulleriana*, larger than the former, and having the appearance of being more thickly scaled and less glossy than the latter.—H. G. K.]

Description of the larva of Hypsipetes impluviata.—On September 11th, 1867, Mr. George Baker of Derby very kindly sent me several larvæ of this species feeding in curled-up leaves of alder. After they came into my care, I noticed that they lived and fed continually in concealment, which they managed to do either by uniting leaves together (somewhat after the manner of the *Cymatophoræ*), or else by curling one side of a leaf over the other.

The usual position in repose is a curve, the head being turned sideways round to the middle of the body; but, when a larva is exposed by being ejected from its dwelling, it loops with activity, pausing occasionally, and stretching its head in all directions in a most impatient manner, as if in search of another retreat. It is only when so stretched out that its actual length can be momentarily observed.

When full-grown, it is then seen to be about seven-eighths of an inch in length, and rather thick in proportion, the body very slightly depressed, of about equal bulk throughout, for it tapers but a very little just at each extremity.

In some, the ground colour of the back is pale purplish-grey, or brownish-grey, with the belly of the same; the head brown, freckled with still darker brown: the back of the second segment black, with the dorsal line running through it as a pale greyish line, but on all the other segments it is wider, black in colour, and thickest about the middle of each segment, suggestive there of an elongated diamond on some of them. The rather thick sub-dorsal line is of the pale ground colour, begins on the second segment, and is equally well defined throughout its entire length, by reason of the back above being freckled and suffused more or less with dark purplish-brown, especially around the thickest part of the dorsal line,—where, on each side of it, an indistinct dark wedge is thus formed with its base on the dorsal line, and its point directed outwards and forwards; besides the general clouding and darkening of the back, there is also a series of black wedge shapes that tend to define the upper edge of the pale sub-dorsal line much more clearly; these are placed at the beginning and end of each segment, the anterior one pointing backwards, and the posterior one forwards, while on the thoracic segments they become united and linear.

The side, as far as the spiracles, is freckled and clouded with dark purplish-brown, similar to the back, and a fine longitudinal line of the pale ground colour runs through it near the lower part: the spiracles are black, and followed by a broad stripe of the pale ground colour, and then a fine interrupted line of blackish; the tubercular dots black, each emitting a hair, and the pro-legs tipped with blackish.

In other examples, the ground colour is pale pinkish, ochreous, or flesh colour, and the markings are brown and much paler; the black wedge shapes almost, or even entirely, absent, and the dorsal line is interrupted at the beginning of the segments.

By the middle of October these larvæ had ceased feeding, and did not retire to earth, but remained motionless within their hiding places in the leaves, and so continued until the beginning of December, when they became pupæ therein.

The pupa is nearly half-an-inch long, rounded at the head, thick in the middle, the abdomen tapering to a point with anal spikes attached to the threads spun within the leaf; its colour is bluish-black, and it is entirely without gloss.

The perfect insects appeared from 22nd to 24th of May, 1868.—WM. BUCKLER, Emsworth, January, 1870.

Note on the nomenclature of wing-nerves, and on the importance of the abdominal appendages in specific determination.—In the last part of the Stettiner Entomol. Zeitung (Jahrg. xxxi., p. 316), is an article by Dr. Hagen on the great difference of nomenclature used for the neurulation of the wings in the various orders of insects, and, on the assumption of an undoubted fact that in all the orders the perfect insects and their nerves are formed after one analogous and common type, advocating the desirability of applying in every case the same name to each nerve or its branches. The practicability of the proposed system is illustrated by figures. "Now," Dr. Hagen says, "no one concerns himself about his neighbour, each is sovereign in his own domain." Besides drawing attention to this subject, I wish more particularly to advert to the following remark on other structural and specific characters.

"I have seen *Acentropus* in plenty. From the locality mentioned by Noleken and also among those found by Lenz on the sea-shore in East-Prussia, it is found with remarkable brown-marked wings. Naturally, I do not stop here to decide whether several species exist. In every case the examination of the anal appendices would afford certain data. I have always wondered that Lepidopterists should ignore such remarkable structures, for, as far as I know, the slight essay in De Haan's beautiful work remains entirely without imitation. The having to do only with colour of wings, dots, streaks, spots, rows of dots and streaks of spots, has always kept me far from *Lepidoptera*. Linné, whose fame and name were first due to his investigation of the *genitalia* of plants, knew also their difference and variety in insects. Remarkably enough, he once said, if my memory is correct, '*Genitulum disquisitio displicet.*' Just now, I have cursorily looked over a great many *Lepidoptera*, and am still more astonished that these parts are so neglected. Precisely in the most difficult genera (*Argynnis*, *Hesperia*, *Noctua*), where the species are nearly allied and often difficult to determine, they afford excellent differential characters. Mr. Burgess is engaged here in the investigation of them in American species, and his drawings and preparations delight me daily. I am convinced that this species-embracing investigation will result in a real advance of science."

In the large *Lepidoptera*, the examination of the genital segments may be con-

paratively easy; but in the *Micro-Lepidoptera*, where the body is not only very small but is covered with scales, to determine the microscopic differences of the parts must be exceedingly difficult; and, as I apprehend that the removal and abrasion of the segments will be necessary, the value of the result, however satisfactory in itself as regards the specimen operated on, would be of small practical utility in judging of the specific identity or distinctness of other specimens of great general similarity not so examined. I do not say this to discourage examination, for the difficulty may be hypothetical; and it would often be very desirable to obtain some positive permanent structural character in combination of the slighter and variable ones of "colour, dots, streaks and spots," upon which hitherto, in descriptions of species, reliance has been placed. The researches in this direction of Boheman, Flor, and especially Fieber, with respect to *Hemiptera-Homoptera*, have brought to light a certain, definite and immutable character of the utmost value in separating species otherwise very similar. It should be mentioned, as a hint to workers, that, in this Order, the greater and more decisive differences are found in the male. Possibly with small *Lepidoptera* it may be found of advantage to examine the bodies while they are fresh and flexible. What revelations may be in store for us from this source of the gradation (or degradation) of species by natural selection or of its impossibility?—J. W. DOUGLAS, Lee, 16th May, 1870.

ENTOMOLOGICAL SOCIETY OF LONDON, 6th June, 1870; F. P. PASCOE, Esq., F.L.S. Vice-President, in the Chair.

J. V. Jacques, Esq., of Bristol, was elected a member.

Mr. McLachlan exhibited the partially gynandromorphous example of *Brachycentrus subnubilus*, Curtis, noticed at p. 19 of this Vol.

Mr. S. Stevens exhibited living examples of *Ateuchus semipunctatus*, recently captured by him on the shores of the Adriatic. One of these had been placed in bruised laurel leaves when captured, but was proof against this generally-adopted method of killing *Coleoptera*.

Mr. Warwick King, present as a visitor, exhibited a collection of insects from the interior of Natal.

The Secretary exhibited a collection sent by Mr. Ansell from Kinsembo, S. W. Coast of Africa.

Mr. Müller exhibited gall-like swellings of the stems of juniper, found near Go halming; remarking on their apparent connection with the gall-making *Lepidoptera* of the juniper, bred by Herr Hartmann (vide Stett. Ent. Zeit., 1868, p. 109).

Mr. Butler read additional notes on the probable identity or distinctness of *Argynnis Niobe* and *Adippe*, especially with regard to Freyer's remarks on their earlier stages.

Mr. Crotch communicated "The genera of *Coleoptera* studied chronologically, part 2 (1802—21)."

Major Munn, present as a visitor, gave an account of his experience with the honey-bee, the result of many years' observation on its habits; and exhibited numerous anatomical drawings and specimens, in illustration of his theories. He was inclined to combat the opinions of Von Siebold and Dzierzon on the generation of the bee. He had found that the last eggs laid by the queen, or those laid by an old queen, invariably produced drones. According to his opinion, the queen-larvæ did not take nourishment in the ordinary manner, the alimentary canal ending in a *cul de sac*, but it existed and increased by means of absorption of the liquid contained in its cell, and in which it was immersed.

NOTES ON THE INSECTS OF STRATHGLASS, INVERNESS-SHIRE.

BY F. BUCHANAN WHITE, M.D.

In the summer of 1869, I paid a visit to Strathglass; and, as this district is almost unbroken entomological ground, an account of its insect-fauna may be interesting, and will, I hope, induce some adventurous collector to turn his back on Rannoch and explore further this productive glen. Should any one meditate a visit to Strathglass, I shall have much pleasure in assisting him with any information as to localities. &c.

Strathglass (the "grey valley") lies parallel to, and north of, the chain of lochs that form the Caledonian Canal, and begins a little to the west of Beauly. It is about 18 miles in length, and has on its north side three tributary valleys, which run nearly parallel to it. These are Glen Strathfarrar, Glen Cannich (the "valley of cotton grass"), and Glen Affrick (the "valley of greyish water"), the last being a continuation of Strathglass and of about the same length. All the valleys are narrow and bounded by high hills, whose lower slopes are covered in many places with forests of birch and pine. At the top of each glen the mountains attain their greatest height—one of the highest being Mām Suil (the "rounded hill of the eye," *i. e.* of the extensive view,) near the top of Glen Affrick, and about 3800 feet in height.

Fasnakyle (the "growing of the trees"), where my quarters were, is situated near the opening of Glen Affrick, and in some extensive birch woods; and my principal collecting ground was an area of one mile long by three broad—one mile along the river and three up the hills. The lowest part of this area was about 200 feet above the sea, and the highest about 2500 feet. Within this space almost all the species I captured in Strathglass occurred. A short description of the vegetation within this area will give an idea of a productive collecting ground in the Highlands. In the lower parts are woods of birch mixed with willow, alders, and a few aspens, the undergrowth being heather, bilberry, with bracken and other ferns, and the whole surface of the ground rough and broken in the extreme, here rising into rocky hillocks, there cleft by the winter torrents—one of my sugaring rounds, by the way, being up the not-always-dry bed of one of these torrents. Here and there are marshy glades fragrant with bog-myrtle, and leading from one marsh to another are narrow deep natural ditches, often quite concealed by heather, and forming nice traps for the unwary collector: more than once it was my fate to find suddenly one leg immersed in a couple of feet of ice-cold water, while the other remained high and dry, a sensa-

tion decidedly more exciting than pleasant. At about 800 feet the trees become less frequent (except beside the burns), and the heather and *Myrica* more exuberant, but becoming less so as we reach a height of 2000 feet, at which beds of dwarf birch (*Betula nana*), cloud-berry (*Rubus chamaemorus*), and other alpine plants appear. Here, too, is a small deep loch (producing *Dytiscus lapponicus*, &c.), whose waters and banks were inhabited by several boreal insects.

In recording the results of my investigations of the *Lepidoptera* of Rannoch and Achilty, I mentioned all (or nearly all) the species met with, and by comparing these lists with the list of what I found in Strathglass, and with lists of the productions of other parts of the Highlands, I am led to the conclusion that, given the requisite amount of uncultivated ground and of natural wood, the fauna of nearly every part of the Highlands (especially north of the Grampians) will be found almost identical, and only modified in four respects, viz.:

1st—By the altitude of the mountains;

2nd—By the proximity of the sea;

3rd—By the apparently local situation of a few species, the cause of which is obscure;*

4th—By the longitude.

1. Of truly alpine *Macro-Lepidoptera* (*i. e.* species not found below a certain altitude) we have only about 8 or 10 species in Britain; and though many of these are at present known to have but few localities, it is probable that when all the lofty mountains have been examined, their range will be found to be co-extensive with the required altitude. It is natural to suppose that as we go north we should gradually find the necessary altitude (in Britain) becoming less and less; but in northern Scotland we are limited to so comparatively small an area, that it would require very careful observations to establish this. If, however, we were to take the case of a species common to the Alps, to the Scottish mountains, and to the Scandinavian fauna, and to carefully note the altitudes at which it was found as we proceeded towards the north, we would obtain a series of heights beginning at several thousand feet above the sea, and gradually descending to the sea level.

2. I have referred to the influence of the sea in a previous note (Vol. vi, p. 170). and several instances of this influence will be found in Mr. Norman's lists of the Forres *Lepidoptera*.

3. The local distribution of some few species will probably, when

* "Who can explain why one species ranges widely and is very numerous, and why another allied species has a narrow range and is rare?"—Darwin, "Origin of species," p. 5.

the Highlands have been more thoroughly "worked," be found to be more apparent than real; though certainly the reason why some species, too conspicuous to be easily overlooked, are of local distribution, seems remarkable: for instance—the occurrence of *Erebia Medea* in some localities, and its absence in others of apparently the same nature and equally suited to it.

4. When the British *Lepidoptera* have been as thoroughly examined as has been the British Flora, we will no doubt find that certain species inhabit only the eastern parts of the country, and others only the western, as is the case with certain plants: but at present I do not think that we can with certainty affirm which species are only eastern and which only western, though at the same time we have good grounds for believing some species to be one and some the other. The Highlands have been as yet so unequally worked, that nothing can be said definitely on this point regarding the insects inhabiting them.

Lepidoptera in Strathglass.—The number of species of *Macro-Lepidoptera* noticed by me are as follows:—

<i>Diurni</i>	15	<i>Drepanulæ</i>	2	<i>Deltoides</i>	1
<i>Nocturni</i>	16	<i>Pseudo-Bombyces</i> ..	5	<i>Pyralides</i> ...	11
<i>Geometræ</i> ...	67	<i>Noctuæ</i>	79	<i>Crambites</i> ...	11

No doubt in a better season than 1869 was, the number would be greatly increased. I now proceed to mention some of the rarer species. *Argynnis Euphrosyne* was, as would seem to be the rule, in all the Highland valleys of northern Scotland (*i. e.* north of the Grampians), as common as *A. Selene*; and *A. Aglaia* was by no means rare, though somewhat more local than the other two. The most universally distributed butterfly, however, was *Erebia Medea*, W.V., which absolutely swarmed in all the open marshy places in the woods, occasional individuals even coming into the garden. I noticed that this species appeared to have the limit of its range above the sea, at about 800 feet, while both *Cænonympha Davus* (*Typhon*) and *Pamphilus* occurred at upwards of 2000 feet. Indeed, these two species, along with *Erebia Epiphron* (which, though probably a native of this district, was not found by me), seem to be the only British butterflies which inhabit the higher regions of the mountains; for *Vanessa urticæ* (with some other *Vanessidæ*), though often seen on the summits of high mountains, is probably only a chance visitant, whose strong wings and aspiring mind have carried him thither, and not a regular inhabitant, whose larvæ would be found. *Polyommatus Icarus* (= *Alexis*) is another species

found at a good height, but considerably below that of *C. Davus*. *Chrysophanus Phloxæ* and *Nisoniades Tages* both occurred, but were rare. The larvæ of *Cossus ligniperda* infested a few birch trees, and *Hepialus vellea*, *lectus*, and *sylinus* occurred; *humuli* and *lupulinus* (rather a rare species in northern Scotland) being, as might have been expected, apparently absent. *Euthemonia russula* (♂) was rather common and widely distributed, and *Arctia plantaginis* very local and not abundant. A few larvæ represented *Demas coryli* and (with pupæ) *Orgyia fasciata*. *Venilia maculata* was not common; one specimen has the hind-wings of a much paler colour than the fore-wings. *Ennomos tiliaria* came to light, and was occasionally seen in the woods, and of *Dasychia obfuscata* three specimens (one larval) were taken in widely different localities; of these one occurred in a low-lying marsh, at night. One specimen of *Venusia cambricaria* was taken on August 4th. Of the genus *Acidalia*, *fumata* and *remutata* were the commonest, *aversata* and *bisetata* being rather scarce. *Macaria notata* could scarcely be called common, but was widely distributed in the woods, its favourite resting place being on or near the ground; it was also found in the garden, and *M. liturata* of course in the pine woods. *Fidonia pinetaria* turned up in several places, being, however, not very abundant, and generally in bad condition. Inverness-shire must therefore be added to Perthshire and Ross-shire as a habitat of this species: probably, however, it occurs in most counties of Scotland north of Perthshire. Five *Larentiæ* were represented, *salicata* by only one or two, but the others by many, specimens; *olivata* being, however, local. Though not found yet, *ruficinctata* should certainly occur in this district. *Emmelesia ericetata* was the only representative of its genus, and was both local and scarce. The *Eupitheciæ* were five or six in number, *pulchellata* larvæ having evidently been common on foxglove, though sought for at rather too late a season for many to be found: indeed, if my attention had not been turned that way by Mr. Longstaff having mentioned in a letter that he was finding the larvæ at Forres, I would have probably overlooked the species. Other species were *pumilata*, *satyrata* (*callunaria*), &c. *Lobophora hexapterata* was taken on June 3rd close to the garden, and one larva (which produced a moth this spring) of *L. lobulata*.

Of the genus *Melanippe* I only saw *tristata* (2 or 3), *subtristata*, and *montanata*. *Coremia minutata* was scarce, and *ferrugata* not abundant. One specimen of *Phibal pteryx lapidata* came to light on Sept. 6th, but all my searching did not result in detecting the head quarters of this species. *P. lignata* was not rare, but local in a marshy place at

night. Seven species of *Cidaria* were found, the best being *psittacata*. *C. miata* was taken on the 5th of June in good condition, but probably had hibernated. Very dark (almost unicolorous) varieties of *C. populata* were not very uncommon near Mām Suil, and the variety *albo-crenata* of *corylata* was common with the type in many places. *C. fulvata* was rare.

The genus *Acronycta* was well represented by seven species, several of which occurred both in the perfect and larval states, and all the seven were taken at sugar. The southern species *megaerphala* appears to be a true native of northern Scotland, wherever its food-plant, *Populus tremula*, is at all common. *A. leporina* turned up occasionally at sugar, and a few larvæ were found on birch and hazel. Larvæ of *menyanthidis* were not very scarce, feeding upon *Myrica gale*, and, more rarely, upon heather and sallow. It has, I believe, been lately stated in "Newman's Entomologist" that *Myrica gale* is probably *not* the common food-plant of *menyanthidis*, but it certainly *is* the common food of the larva in the north, whatever it may be elsewhere. A few specimens of *myricæ* came to sugar. The time of the appearance of the imago of *myricæ* is said (and I believe correctly) to be from the middle of May to the middle of June. How, then, did it happen that both in 1868 and 1869 I never saw a specimen before the 30th of June, and that all the specimens I have taken were apparently newly emerged from their puparia? The female has dark grey hind-wings, a fact, which not being mentioned in Stainton's Manual, greatly elated me (for several days after my capture of one) with the idea of a new British species. Becoming, however, rather doubtful on the matter, I applied to my friend Mr. Norman for some extracts from Guenée's "Noctuélites," and thereby solved the enigma. I have never been able to find the larva of this species for all my searching for it. From what I have heard, however, it would appear that, not *Myrica*, but heather (or sallow) is the usual food-plant. Though I was unsuccessful in my search, yet the larva of *myricæ* was found in Strathglass this year (as well as at Forres and Rannoch); at least, Sir D. C. Majoribank's children described to me a caterpillar that they had found (and which had spun up) which could have been none other than that of *myricæ*. *Hydræcia nictitans* was common on ragwort, and *micæa* came to light. Dark varieties (and intermediate forms) of *Xylophasia polyodon* were as common as the type, and abundant at sugar. On the 5th of July I had the great pleasure of taking a specimen of *Crymodes exulis* at sugar. Very few specimens of this insect seem to have been taken in Britain; I only know of 9 or 10 British specimens. To the proboscis of my specimen several orchid

pollen-masses are attached. Though several good entomologists seem still uncertain on this point, I suppose that there is little doubt but that *Hadena assimilis*, Doubleday, is identical with *Crymodes exulis*, Lefebure. The common species *Mamestra brassicæ* and *Apamea ocella* were only represented by a single specimen of each; *M. anceps* (very dark) and *A. gemina* being the commonest species of their genera. A specimen of *Celana Haworthii* was found at an elevation of 2000 feet. *Caradrina blanda*, which seems to be a rare insect in Scotland, was taken once or twice at sugar. These northern examples are lighter in colour and not so strongly marked as English ones. Only three species of *Agrotis* occurred; *segetum*, as seems to be the case in many Highland districts, being absent. *A. agathina* was found both in the perfect and larval states; not, however, commonly.

Of the genus *Triphana*, *pronuba* was rare, and *orbona* very common and variable in the coloration of both fore and hind-wings.

The genus *Noctua* was represented by thirteen species, the less common being *glareosa*, *triangulum* (one specimen, very dark), *conflua*, and *neglecta* (all shades, from light ochreous to darkish red). *Orthosia suspecta* occurred sparingly, as did *Xanthia cerago*, and its variety *flavescens*. One specimen of the local *Euperia fulvago* came to light, thus adding another to the three Scottish localities that I have recorded in this Magazine. One larva of *Epunda lutulenta* and two specimens of *E. nigra* were all that I saw of that genus. *Aplecta tinctoria* appeared on June 26th, and lasted till July 26th, but was scarce; rather commoner was *Aplecta occulta* (June 30th), which came both to light and sugar. *Hadena* was represented by nine species, *adusta* being excessively abundant at sugar, and, as usual in the north, very dark in coloration. By the way, has the variability in the shape of the orbicular stigma in this species been noticed? It varies in my specimens from perfectly orbicular to long-pyriform. The other less common species were *glauca*, *contigua*, and *rectilinea*. The larvæ of *Plusia interrogationis* were found on heather, and the moths at rest on rocks during the day, and flying over heather.

Stilbia anomala occurred in great abundance on one heathery bank and, less commonly, at light. As usual, female examples were very scarce, only four or five examples having been found.

Pyrætes, as might be expected, were not abundant. *Scopula alpina* was, of course, found on the higher hills, and one specimen of *S. decrepitalis* turned up in the last place I would have thought of looking for it—a deep ravine; but perhaps this is its usual habitat.

Among the *Scopariæ* were *muralis*, *truncicolella*, and *atomalis*.

Crambus and *Melia* were the only genera of *Crambites* that had any representatives. Of the first-named, eight species were more or less abundant, the scarcest being *pascuellus*—not a common species in Scotland, as far as my experience goes. *Margaritellus* was very common in marshy places in woods on the hills, and *pinetellus* not uncommon on dry banks. *Perlellus* was very abundant and very local among bracken in a sandy meadow, and varied excessively both in size and coloration; most of the examples I assigned to *Warringtonellus*, but Mr. Doubleday says that they are all *perlellus*. The species I recorded in my notes on Ross-shire *Lepidoptera* as *Warringtonellus* must therefore be referred to *perlellus*.

Of the *Tortrices* I took a good many species, some of which I have not yet determined. *Peronea caledoniana*, *Mixodia Schulziana*, and *palustrana*, were all tolerably common. *Phoxopteryx ramana* occurred on aspens, and *P. biarcuana* among heather. *Ephippiphora bimaculana* abounded in the birch woods, and *Pamplusia monticolana* in marshy ground half-way up Mām Suil, while the variable *Eupæcilia ciliella* was common (and as variable as usual) among heather.

The *Tineæ* that I took still remain untouched, so of them I will say no more, save that I took one specimen of *Depressaria cinifstonella*, and found the larvæ of four species near the above-mentioned loch on Ben Chearan. One of these was a *Nepticula* larva, in the leaves of *Rubus chamæmorus*. Of this (which is probably the same as one found by Wocke in the north of Europe, Finmark), I only found one larva, but the empty mines were not very rare. The other three species were found upon *Betula nana*—a *Swammerdamia* possibly new (*vide* Mr. Stainton's remarks in the Annual for 1870, p. 4), a *Lithocolletis* larva, which has produced *L. ulmifoliella*, and a *Nepticula* larva, from which Mr. Stainton bred *betulicola*,—the specimens of the latter being rather smaller than usual, and therefore possibly the smallest known *Lepidopteron*!

Coleoptera in Strathglass.—Dr. Sharp found several new species in this glen some years ago; and to him I am indebted for kindly giving me information regarding the localities of several species. I managed to find a few rarities, but probably a very small proportion of what would have been found by one knowing more of this order than I do. Among my captures (which were obligingly named for me by Mr. Bold) are the following, which I believe are worth recording.

Carabus glabratus, not rare at sugar (*C. catenulatus* and *violaceus* tormented me awfully, some patches of sugar having no less than ten of these wretches at one time). *Patrobus assimilis* and *Bembidium*

tibiale. *Hydroporus griseo-striatus* in the loch on Ben Chearan, by no means rare in June. *H. 9-lineatus* scarce, and *incognitus*, Sharp, two specimens. *Colymbetes bistrictus*, *Agabus arcticus* and *Sturmii*, not rare. *Agabus Solieri*, one ♂ and one ♀ on Mām Suil; possibly the first occasion on which the ♂ has been taken in Britain. *Dytiscus lapponicus* in the loch on Ben Chearan, not common. Of the dozen or fourteen specimens that I took by repeated visits to the loch, only three were females. The loch is very rocky and free from vegetation, but in one corner it is muddy, and has a patch of large sedges, and two or three large loose rocks close to the shore. Beside and under these rocks I found the *Dytiscus*. *Haploglossa pulla*, one specimen. *Quedius lævigatus* under bark, and *Hydrocyphon deflexicollis* common on willows. *Trichius fasciatus* common on thistle flowers, and *Cetonia ænea* at sugar. *Pyrrochroa pectinicornis*, one sitting on a stump. *Telephorus abdominalis* and *elongatus*, *Elater nigrinus* and *balteatus*, and *Diacanthus impressus*, all scarce. *Astinomus ædilis*, one specimen brought to me. *Otiorhynchus maurus*, *Magdalinus carbonarius*, and *Cæliodes ruber*, var., also scarce. *Zeugophora Turneri*, not uncommon on aspens close to the house. *Clythra 4-punctata*, one specimen. *Phratora cavifrons*, two or three, and of *Cryptocephalus labiatus*, one. *Donacia aquatica*, not common; &c.

Hemiptera in Strathglass.—In this order I was tolerably successful, being lucky enough to take several new species, and a few local or rare ones. *Nysius thymi* was common, but local, upon *Erica cinerea*. *Miris holsatus*, as usual in the Highlands, swarmed. *Phytocoris populi*, not common, upon aspen. *Ætorhinus bilineatus*, abounding on aspens. *Psallus querceti*, not rare on willows; *Ps. Whitei*, rare, only taken at Rannoch before. *Ps. distinctus*, not common; and three specimens of a *Psallus* that Mr. Douglas considers may be *P. argyrotrichus*, Fieb., and consequently new to Britain. Unfortunately the specimens are too immature to admit of perfect assurance as to the species. *Agalliastes pulicarius*, not rare, and along with it *Agall. Wilkinsoni*. This species was supposed to be attached to *Maianthemum bifolium*, but neither that (which is not a Scottish species) nor any allied plant grew in the locality of the *Agalliastes*. *Lygus Spinolæ* among *Myrica*. *Zygnotus pselaphiformis*, ♂ and ♀, on birch trunks, not common. *Salda orthochila*, not rare, on dry banks, and *S. stellata*, *littoralis*, and *riparia*, at the edge of lochs and streams. *Nabis flavomarginatus*, not common. *Hydrometra odontogaster*, abundant, and *Costæ*, not common.

Of the genus *Corixa*, many species were abundant. *Corixa Sharpi*

(3 or 4) occurred in the loch on Ben Chearan (not "Hearag" as I, by mistake, informed Mr. Douglas, E. M. M., vol. vi, p. 249), and *C. alpestris* abundant in the same place. The other species included *C. venusta*, *Wollastoni*, *socialis*, *cognata*, *Fabricii*, *fossarum*, *præusta*, *Scotti*, *Douglasi*, &c. *Cymatia Bonsdorffii* was common, but confined to one or two pools. Among the *Homoptera* were also some good species, including two possibly new *Cixii*; *Delphax distinctus*, Flor (new to Britain), *Acocephalus bifasciatus*, *Iassus cruentatus*, &c.

Neuroptera in Strathglass.—Dragon-flies were scarce; the commonest being *Cordulia metallica* (see p. 38), more often seen than caught, but not rare about some lochs on the south side of the glen. *Trichoptera* were abundant, and possibly some novelties might reward a careful search. The best I took was *Limnophilus pavidus* (Hagen), of which I found two female specimens. Mr. McLachlan (who kindly named them and others for me) informs me that the claim of this species to be considered British, rested only on a single male specimen of dubious origin, in the British Museum. *Phryganea obsoleta* was not very scarce beside the loch on Ben Chearan, where also *P. striata** occurred.

Perth: May 8th, 1870.

A FRAGMENT OF A LIFE-HISTORY OF ACANTHOSOMA GRISEA.

BY REV. J. HELLINS, M.A.

All of us who have read Kirby and Spence, must remember their account, taken from De Geer, of the affection shown for its young by this "Field-bug," and their exhortation to the entomologist to put aside recollections of bugs which do not live in fields and trees, and to search upon the birch tree for so interesting a subject. Whether any one has ever searched, of course I cannot tell; but I am informed by those more learned in bug-lore than myself, that De Geer's account remained unverified—at least in print—until Mr. Parfitt furnished Messrs. Douglas and Scott with a note of the observations made by him a few years ago, on a female *Acanthosoma grisea*, which he found guarding most anxiously four young ones, somewhat advanced in growth (British Hemiptera-Heteroptera, p. 103). And as it has been my luck

* The examples of this species captured by Dr. White, and referred to here, are very extraordinary, scarcely larger than *P. varia*, very dark and strongly marked; did not the appendices present such certain characters, this form would probably be considered as representing a distinct species. On the contrary, some of the specimens of *P. obsoleta* are very large, equal to ordinary *P. varia*, and with the contrast of colours almost as great.—R. McLACHLAN.

lately to be able to watch for some little time a similar family, I have thought that some account of what I saw would not be altogether without interest.

On the 19th of last month, as I was poring over the outer twigs of the birch tree which I have in my garden—"convenient" for larva rearing—my eye fell on a reddish-brown bug sitting motionless on the under-side of a leaf, just at the level of my head. On looking at it more closely, I saw it was covering, as well as it could, a number of little oval greenish bodies—at first sight like eggs. Further examination, however, showed that these small creatures were the young bugs, in their first stage, I suppose, after leaving the egg, for the cluster of egg shells could be seen quite empty and transparent, under one side of the mother, while the young ones were mostly congregated under the other side. At this time then, the brood, numbering less than 20, were clustered together in two or three rows, some lying over the others, and really—but for their being silent and motionless—reminding one of a numerous litter of sucking pigs.

The parent bug showed no fear, and barely moved when I touched her, only shifting her legs and sloping her shoulders and back so as to protect the side on which the danger threatened; and I could not see that either she or the young ones were drawing their sustenance from the leaf on which they were placed; and, indeed, from their position, it was not possible to make out any part of the young ones, save their plump abdomens.

This state of things went on till June 23rd, when, on paying my morning visit to my family, I found the young bugs had advanced a stage in life; perhaps they had moulted, though I could see no cast skins; but anyhow, they had become larger in size, and were no longer lying motionless, but moving about very actively, and busily vibrating their antennæ. I now counted fifteen in the brood alive, and two that seemed in some way to have died, and remained sticking to the leaf; the empty egg-shells were gone, but whether accidentally or purposely removed, I cannot say.

The mother was now quite in a state of fuss; she moved about, felt everywhere with her antennæ, and, if I attempted to touch her brood, she fluttered her wings rapidly; but, with all this commotion, neither she nor the young ones moved away from the under-side of the leaf, on which they had hitherto been located, for two days longer; and during this period, if the sun shone out and the leaf were still, there was a great deal of running to and fro, but at night and when the wind blew roughly, the mother contrived to get them under her, and sat covering them as at first.

On 25th June, I found their native leaf quite deserted, and for a

minute was afraid that the sparrows had been breakfasting off its tenants, but in another minute my eye caught the mother running on a leaf-stalk, and presently I could count up all the young ones, just setting off on their travels, and scattered about in fours and fives all over the branching twig, on which their leaf grew: they seemed busy exploring, and the mother ran from place to place feeling for them with her antennæ.

This I may say is virtually the end of my observations; for, although at this point I tried to see more, by bringing the twig, with the whole family on it, indoors, and enclosing it with a glass cylinder, yet, save that the young seemed to get some food from the sticky exudations on the birch-catkins, I saw nothing to reward my watching that I had not seen before. And besides, the young bugs *would* get into the water bottle, and drown themselves, notwithstanding I had plugged up its mouth as closely as I could; and the mother seemed to get disheartened and weary, till at last I sent her and four surviving young ones, with the dead bodies of six or seven more, to Mr. Douglas; but the bottom of the box unfortunately getting loose in its transit, he could find in it no more than the mother, and two dead young ones. I wish I could have ended my story more pleasantly, for I do not know that in all my life I was ever more interested in anything, than I was in watching this quaint little family; however, I understand there is good hope that someone else, better qualified to write about bugs, is to have the opportunity to see, and, let us hope, describe more accurately such a scene as I have tried to depict.

Exeter: 12th July, 1870.

THE GENERA OF *HESPERIDÆ* IN THE COLLECTION OF THE
BRITISH MUSEUM.

BY ARTHUR G. BUTLER, F.L.S., &c.

I am indebted to Mr. W. F. Kirby for enabling me for the first time to compare Herrich-Schäffer's Classification of the *Hesperidæ* in his "Prodromus Systematis Lepidopterorum" with my own arrangement of this family in the National Collection, and I am surprised to find how nearly the two arrangements agree. I have a bone or two, however, which I must pick with Dr. Herrich-Schäffer with regard to some of the genera rejected by him; as to his new species, nobody could make them out if he tried from the line or two of description, without a locality in any case to lessen his bewilderment. I doubt not (as I sincerely hope) that Lepidopterists generally, will agree to omit them in their lists of species until they have been more clearly defined; if not, every Hesperidian Monograph will terminate in a kite-tail of undetermined species.

Hesperia, Fabr., is rejected because the first section of it is not typical, but as the first section does not agree with the description, it is evident that it was never intended to be typical, but was placed first for convenience sake: the description says, "antennæ sæpius uncinnatæ," and the *Lycænidæ* have nothing of the kind, but the second section begins with a hooked antenna, and is doubtless typical of the genus *Hesperia*; *Pyrgus*, which has been suggested to me as synonymous with *Hesperia*, has no hook to its antennæ.

Leucochitonea, Wlgr. (part) does not seem to me to be identical with *Brontiaides*. Hübn., and as I do not agree with Dr. Herrich-Schäffer in determining that an insect which I have never seen is not congeneric with *P. niveus* of Cramer I prefer to retain the latter in *Leucochitonea* until I have substantial evidence of its distinctness.

The genera seem chiefly to be determined from the spines on the legs, which appear to me by no means so safe a character as the antennæ, although I admit that in the genus *Pamphila*, the latter seem to vary *ad libitum*; this is, however, the one genus in the family, which seems to be in a state of transition.

The genera and named species in the British Museum are as follows:—

GONIURIS, Hübner.

Verz. bek. Schmett., p. 104 (1816).

Typical species, *G. simplicius*, Stoll.

The following named species in the collection come into this genus—*G. Proteus*, Linn.; *decussata*, Ménétr.; *Dorantes*, Stoll.; *simplicius*, Stoll.; *Catillus*, Cramer; *cælus*, Cramer.

Group without tails=GONILOBA (part) Westw.

G. pseudexadeus, Westw.; *Tityrus*, Fabr.; *Exadeus*, Cramer; *Socus*, Hübn.; *Lysidas*, Sm. Abb.

Sub-genus EUDAMUS, Swainson.

Zool. Ill., 2nd s., *Hesperidæ* (1833).

The species of this group are broader in the wing than in *Goniuris* proper, and are banded with white where the others are banded with yellow.

E. Orion, Clerck; *Brachius*, Hübner; *Chalco*, Hübner.

Species without tails.

E. Aunus, Fabr.; *Neis*, Hübn.; *Itylus*, Hübn.; *Vespasius*, Fabr.

Genus TELEGONUS, Hübner.

Verz. bek. Schmett., p. 104, n. 1096 (1816).

Typical species, *T. Talus*, Cramer.

This is perhaps the true *Goniloba* of Westwood, it seems to differ sufficiently from *Goniuris* to be recognised; the characters at once apparent are the more suddenly hooked club to the antennæ, more convex outer margin to all the wings, and generally more elongated hind-wing, never possessing a tail.

The species named in the Museum collection are—*T. Enothrus*, Cramer; *Alector*, Felder; *fulgurator*, Walek.; *creteus* (syn. *Parmenides*) Cramer; *Habana*, Lucas; *Alardus*, Stoll.; *Talus*, Cramer; *Apastus*, Cramer; *Aulestes*, Cramer.

Brown and fulvous section.

T. Anaphus, Cramer; *Zestos*, Hübner; *Procus*, Cramer; *Nicias*, Fabr.; *avitus*, Cramer; *Midas*, Cramer; *Sebous*, Felder; *Euribates*, Cramer; *Ramusis*, Cramer; *Erytrus*, Cramer; *Broteus*, Cramer; *Astylos*, Cramer; *vulpinus*, Hübner; *Crameri*, Latreille.

Genus CHÆTOCNEME,* Felder.

Sitzungsber. Kais. Akad. Wissensch. Wien, Band 40, n. 7, p. 460 (1860). Typical species, *C. corvus*, Felder.

This is the Indo-Australian representative of *Telegonus*, and seems to differ chiefly in the thickening of the club of the antennæ, especially just before its hook.

C. Thyrsis, Fabr.; *C. thrax*, Linn.

We possess several species allied to the type, but hitherto I have not succeeded in naming them.

Genus ÆTHILLA, Hewitson.

Descr. of 100 *Hesperidæ*, part 2, p. 55 (1868).

Typical species, *Æ. Eleusinia*, Hewits.

Æ. Elusinia, Hewits.; *Amphion*, Hübner; *Bathyllus*, Sm. Abb.

The above group seems intermediate in character between *Eudamus* and *Achlyodes*.

SPATHILEPIA, new genus.

Typical species, *S. Clonius*, Cramer.

Antennæ of *Eudamus*, form of wings almost as in *Telegonus*, but the front-wings always more or less angulated below apex; anal angle of hind-wings clothed with long radiating spatulate scales in place of ordinary fringe: upper-surface colouration black or brown banded with white or yellow; under-surface marbled with bands and streaks, as in *Pyrameis Atalanta* and allies amongst the *Nymphalidæ*.

S. tamyroides, Felder, *Clonius*, Cramer, *Cellus*, Boisd. We have another genus allied to the above, which will require a name, but at present I have not succeeded in identifying any of the species belonging to it, unless the *Aristoteles* of Doubleday and Hewitson's "Genera" be referable to it.

* Previously used as a genus of *Coleoptera*.—EDS.

UDRANOMIA, *new genus*.

Typical species, *U. Orcinus*, Felder.

Only differs from *Phanus*, Hübner (sect. of *Augiades*), in its shorter and more compact form, and *Pamphila*-like antennæ.

U. Orcinus, Feld.

GENUS AUGIADES, *Hübner*.

Verz. bek. Schmett., p. 212, n. 1213 (1816).

Typical species, *A. Criniscus*, Cramer.

Section A.—*Phanus*, Hübner.

Verz. bek. Schmett., p. 114, n. 1240 (1816).

P. vitreus, Cramer; *P. leucomelas*, Hübn.

Section B.—*Phareas*, Westwood.

Gen. Diurn. Lepid., p. 515 (1852).

P. Talaius, Linn.; *Gentius*, Cramer; *formosus*, Felder; *Alcmon*, Cramer; *Neleus*, Linn. (= *priscus*, Feld.); *cœleste*, Hewits.

Section C.—*Augiades*, Hübner.

A. Criniscus, Cramer.

GENUS HESPERIA, *Fabricius*.

Ent. Syst, 3, Gloss. 1, p. 325 (1793).

Typical species, *H. exclamationis*, Fabr.

This is the *Ismene* of Swainson, and is very near the preceding. *H. exclamationis*, Fabr.; *Forestan*, Cramer; *Pisistratus*, Fabr.; *Keithloa*, Wllgr.; *Myra*, Hewits.; *gentiana*, Felder; *Chusa*, Hewits.; *subcaudata*, Felder; *Benjaminii*, Guér.; *œdipodea*, Swains.; *Helirius*, Cramer; *striata*, Hewits.; *Gomata*, Moore; *Jupiter*, Fabr.; *bixæ*, Linn.; *discolor*, Felder; *malayana*, Felder; *Sena*, Moore; *Alexis*, Fabr.; *Thridas*, Boisd.; *lugubris*, Boisd.; *Celænus*, Cramer; *Badra*, Moore.

GENUS PYRRHOPYGA, *Hübner*.

Verz. bek. Schmett., p. 102 (1816).

Differs from all genera, excepting *Myseelus*, in the uniformly thickened hook to the antenna.

P. Phidias, Linn.; *Passova*, Hewits.; *Pionia*, Hewits.; *Hadassa*, Hewits.; *Amyclius*, Cramer; *Telassa*, Hewits.; *Charybdis*, Hewits.; *Zelevucus*, Fabr.; *Thosus*, Cramer; *hyperici*, Hübner; *Acastus*, Cramer; *Verbena*, Butler; *Galgala*, Hewits.; *Nurscia*, Swains.; *Ocyalus*, Hübn.; *Mulciber*, Hübn.; *Xantippe*, Latr.; *Poesia*, Hewits.; *Pityusa*, Hewits.; *Oneka*, Hewits.; *Machaon*, Hewits.; *Azeta*, Hewits.; *Patrobas*, Hewits.; *Zonara*, Hewits.; *Hadora*, Hewits.; *Hygieia*, Felder.

(To be continued.)

Note on some ambiguously British species of Coleoptera.—Motschulsky (Bulletin de la Soc. Imp. des Naturalistes de Moscou, 1868, No. 3), in his section of *Acratrichis* (*Trichopteryx*) in which the elytra are rather short, but slightly attenuated behind, describes two new species, from England only; one (p. 178), *punctatissima*, very close to *grandicollis* in form and colour, but shorter, with the posterior angles of the thorax less projecting, the antennæ rather short, testaceous with brown club, the legs testaceous, with the femora darkened, and the punctuation fine and close; the other (p. 179), of the form and colour of *fascicularis*, Gillm., but a third smaller and more convex, very shining, black, with a bronze reflection; legs testaceous, antennæ blackish, with the base slightly testaceous.

Mulsant and Rey (Ann. de la Soc. Linn. de Lyon, xvii, p. 383) refer *Simplocaria metallica*, Sturm, to England (possibly on account of the Stephensian *picipes*, its synonym),—a species distinguished by the striæ of its elytra being produced almost to the apex.—E. C. RYE, 10, Lower Park Field, Putney, S.W.

Note on Drilus flavescens, ♀.—It is stated in De Marseul's "Nouvelles et faits divers," No. 14, May, 1870, that M. Ad. Bellevoye has ascertained that the female of *Drilus flavescens* is not only found in *Helix nemoralis*, but also in several other species of *Helix*, amongst them being *H. pomatia*, *hortensis*, *ericetorum*, and *candidula*. M. Abeille de Perrin, in the same publication, communicates a hint from M. Lespès on the same subject; from which it appears that a good way to take many specimens of ♀ *Drilus* is to collect in February and March all the snails found in gardens, and to make with a penknife an opening at the extremity of the first spiral turn of the shell, opposite the mouth: if fragments stuck together in a kind of spider's web be then seen, there is no doubt of the presence of a pupa of *Drilus* ♀, which will not be long in coming to maturity.—ID.

Note on Donacia comari (*aquatica*, Wat. Cat.).—Dr. Kraatz writes to me that he is now persuaded that *Donacia comari* is a good species; and imagines that Suffrian has confounded little varieties of it with little *D. sericea*.—ID.

Note on a habit of certain Indian Coleoptera.—The Rev. A. B. Spaight, late Missionary to Northern India, has informed me of a fact frequently observed by him at Moultan, and which has, I believe, acquired additional interest from the circumstance of its being a disputed point amongst Naturalists.

It appears that certain large beetles, belonging to the *Lucanidæ* and *Longicornia* are said to saw off small branches from trees in order to get at the sap upon which they feed. Mr. Spaight (who only began to study the habits of insects after he had left England) arrived in India under the impression that the jaws of these large beetles (*Lucanidæ*?) were solely intended for burrowing,—indeed, he had been told almost as much; what was his surprise then, upon first meeting with them in their native haunts, to see the huge jaws clasping a branch round which at the same time the beetle was rapidly whirling, so that in a short time the branch fell to the ground completely sawn through; whereupon the insect immediately set to work to suck up the sap!

Being struck with this apparently new fact, Mr. Spaight paid particular attention to it, and noticed the same thing over and over again, so that he is quite sure of the correctness of his observations.—A. G. BUTLER, 17, Oxford Road, Ealing, 11th July, 1870.

The larva of Tipula oleracea, Linn. (crane-fly), injurious to Rye-grass.—To say that hand-in-hand with the stimulated production of any crop there appears an increased number of noxious insects, is but stating a truism. An instance of this kind has just come under my notice. There exists in this neighbourhood a well managed irrigation farm. Part of this land is at present used for the growing of rye-grass for green fodder, and the luxuriance of the crop in some parts seems a promising augury for a good return in hard cash in exchange for the labour spent on the land.

At present there seems to exist, entomologically speaking, only one drawback, which does to some extent check the growth of the crop. The fields are alive with the larvæ of *Tipula oleracea*, the intervening hedge rows and borders literally swarm with the perfect insects, and afford them a ready shelter for the deposition of their eggs, of which each female lays several hundreds. Bare spots along the borders in sections, where the crop ought to be just springing up, testify to the ceaseless damage done by these larvæ, which remain buried just underneath the surface all day, and are up and doing at night.

The rooks are busy at work to stay the plague, and ought to be protected; but to aid in the work of destruction I would suggest repeated rollings of the infected spots and the fallows with the clod-crusher, and above all a systematic clearance of the rank weeds and long grass along the hedges and ditches encompassing the estate, as these spots are regular breeding stations of this destructive crane-fly.—ALBERT MÜLLER, South Norwood, S.E., 30th May, 1870.

Abundance of pupæ of Callimome devoniensis, Parfitt, ♀.—I have annually at this time been wont to open the still intact galls of *Cynips lignicola*, Hartig, for the so far unsuccessful purpose of meeting with the expected male. At this time of the year two sets of this gall, both of last year's growth, are found on the tree, one constantly larger, showing either the exit hole of the female *Cynips*, or else the rough opening pecked by the tits for the extraction of the fat female larva; the other set of galls, owing to premature arrest of developement, is constantly smaller, without any visible opening and contains now the sculptured pupa of *Callimome devoniensis*, Parfitt, reposing on the larval skin of its victim in the shape of a shrivelled currant-like brown cake. Galls of this size I have never found opened by the tits; whether they are aware that their dainty food is absent therefrom, or whether the parasitic pupa is not to their taste, as we may suppose the perfect *Callimome* in its glittering coat of mail is not, actual experiment will have to prove. Suffice it here to record, that I have this day collected and opened literally hundreds of this smaller *C. lignicola* gall, in all of which the female pupa of *Callimome devoniensis* waited for her resurrection day, and that I have not seen one gall of this kind opened by the birds; nor have I been able to meet in the whole batch of these smaller galls with a single living *Cynips* larva, nor with a single male *Callimome* pupa.—ID.

Deilephila livornica at Dartmouth.—On each of the evenings of June 2nd and 3rd I captured a specimen of this insect, one flying over Red Campion, and the other over Valerian.—S. H. COLES, H. M. S. "Britannia," Dartmouth, July, 1870.

Deilephila livornica in Gloucestershire.—I sent a notice last year of *livornica* having been taken at Risington, in Gloucestershire—at least the remains were brought to me. On the 27th May, in this year, a perfect insect was taken one mile from this village, four miles from the place of the former capture. When it reached me it was much rubbed from being carried in the hand, but a strong large insect.—E. HALLETT TODD, Aldsworth, Gloucestershire, June, 1870

Deilephila livornica near Kilkenny.—I beg to inform you of the capture, in the beginning of this month, of a fine specimen of *Deilephila livornica* in a green-house near the town of Kilkenny, Ireland. As I have not met with the insect before in Ireland, I thought this information might be interesting. I have the specimen in my collection.—ERNEST BRISTOW, Knockbridge Rectory, Belfast, 24th June, 1870.

Deilephila galii at Exeter.—A beautiful larva was brought me last night by a labourer, who said he found it in a mangold-wurtzel field in this neighbourhood; I gave it *Galium saxatile*, vine leaves, and *Fuchsia*, and it immediately attacked the last with great avidity.—J. HELLINS, Exeter, 12th July, 1870.

Dianthæcia irregularis (cæsi) bred in England.—It may interest your readers to know that the Rev. A. H. Wratishaw, of Bury St. Edmunds, has bred two specimens of *D. irregularis* from larvæ collected last year on *Silene otites* (Spanish Catchfly). Mr. Wratishaw has therefore the credit not only of re-discovering the insect, but of determining the food of the larvæ in this country. I may add, that Mr. T. Brown, of Cambridge, has also bred one specimen.—E. N. BLOOMFIELD, Guestling Rectory, July 16th, 1870.

Hepialus velleda near Maidenhead.—About half-past eight in the evening of the 9th instant, I noticed eight or ten moths flying among some nettles which fringed a small plantation in the corn fields between Maidenhead and Cookham. As they seemed too large for *lupulinus*, while their mode of flight was hardly that of the *Noctua* or *Bombyces*, I caught two, and found them to be *H. velleda*. One, the ordinary type,—the other, the well-known variety, *carnus*. Although Wood's "Index Entomologicus" gives Darenth Wood as a locality, recent writers have apparently considered the insect as an exclusively northern species.—A. H. CLARKE, 16, Furnival's Inn, E.C., 17th June, 1870.

[*H. velleda* is not the exclusively northern species that our correspondent would seem to consider. It is known to occur in several southern localities beside Darenth Wood, and the variety *carnus* has been met with at Haslemere; see Ent. Mo. Mag., Vol. iii, p. 186.—EDS.]

Smerinthus ocellatus in pupa two years.—Do any of your readers remember an instance of this? I know that numbers of moths will remain in pupa over one season, but amongst hundreds of *ocellatus* bred and dug, I never had one till this year that passed a second winter in the pupa state.—E. HALLETT TODD, Aldsworth, June, 1870.

Lycæna Alexis deceived.—I have this day seen this butterfly fly towards a very small bit of pale blue paper lying in the grass and stop within an inch or two from it, as if to settle.

Whether it mistook the paper for an insect of its own kind or for a flower, cannot of course be demonstrated, but insignificant as this may appear, taking it in connection with the recorded fact of *Macroglossa stellatarum* visiting painted flowers on papered walls (Newman's Entomologist, iii., p. 6.), it may help to show that colour has, as Mr. Darwin teaches, a great deal to do in attracting insects to certain spots.—ALBERT MÜLLER, 12th June, 1870.

A day at Windermere.—On Whit-Monday I had a trip to the woods about Braitwaite; insects were very scarce till about 6 p.m., then I took amongst young oaks *Tinagma stanneellum* and a few specimens of *Phoxopteryx diminutana* and *subuncana*; *Lobesia reliquana* was in very fine condition, and *Rozana arcuella* was freely on the wing. I beat from hazel *Lithocolletis Amyotella* and *emberizapennella*, and by sweeping I obtained a few *Micropteryx mansuetella*; I then went to the field where I used to get *Coleophora deauratella*, and found it was planted with potatoes and wheat, so I turned to collecting larvæ of *Phlæodes geminana* on the *Vaccinium*.—C. S. GREGSON, Rose Bank, Fletcher Grove, Liverpool, June 10th, 1870.

Captures of Lepidoptera, &c., at Witherslack.—My first visit this year was on May 25th, and, the sun being out for a short time, I turned into the woods at Grange, and soon met with *Catoptria aspidiscana*, of which I took ten, only one-half of them being fine. *Leucophasia sinapis* was flitting quietly about, and the pretty *Pyrallis octomaculalis* was jerking freely about, and was only easily captured when in the act of rising out of the long grass; and *Thecla rubi* flashed past one leaving the impression that one had seen something, but was not quite sure, and the pretty little *Nemeobius Lucina* was just emerged from the pupa, some sitting on the young birch trees to dry their wings. *Venilia macularia* with its merry gambols enlivened the scene, the spot being a perfect bed of purple with the flowers of the columbine.

I then wended my way to Witherslack, and, though the evening was cold, I did pretty well: *Coccyx vacciniana* was flying in swarms over patches of bilberry, a few *Phoxopteryx biarcuana* and *uncana* were dislodged from the willows, and *Penthina pratensis* and *Tinea bistrigella* from the birch. I took six fine *Nemoria viridata*, and, when I reached the Inn, I found a fine *Ligdia adustata* was at rest on the window inside the bar. I should here mention that in this locality I always take a variety of *Incurvaria Oehlmanniella*, with the spots confluent on the inner margin and forming a broad streak, which is even conspicuous when the insect is on the wing; it seems to be a permanent variety in this spot. I finished my day's work by capturing three more specimens of *aspidiscana*, as they were flying at a prodigious rate at sunset.

My next visit was on June 9th; there was a strong wind, the weather seemed breaking, and it was bitterly cold in the evening: I was obliged to content myself with collecting in any sheltered corner, so I set to work collecting larvæ of what I supposed to be *Depressaria capreolella*, and whilst I was down on my knees close to a wall searching amongst the dead leaves of *Conyza squarrosa* and picking up a few larvæ of *Pterophorus lithodactylus*, a viper glided under my hand into a hole in the wall and escaped, as my net and stick were laid down, for I had not expected to find a viper asleep in such a place; then I went under a sheltered hedge on the moss-side, and took a few *Phoxopteryx siculana* and *biarcuana*, and by sweeping the willow I took *Nepticula intimella*, and found *Nep. myrtillella* amongst

the bilberry; the birches yielded *N. argentipedella*, and mixed underwood produced *N. anomalella* and *N. aurella*; then I turned to brushing the buckthorn and obtained a few *Bucculatrix frangulella* and some larvæ of *Gonepteryx rhamni* nearly full-fed. Here I also met with a few *Penthina prelongana*, *Coleophora limosipennella*, and *C. gryphipennella*, *Ornix Loganella* off birch, and *Ornix guttea*; on capturing this last, I looked round for an apple-tree and there was one, although far away from any orchard, *Gelechia notatella* was started from willow bushes, and on the road-side towards the inn, amongst *Veronica chamædrys* I swept a few *Adela fibulella*. I then collected a few larvæ of *Depressaria carduella* for Mr. Stainton, who wished to study that species a little further on his setting board before publishing its history in the twelfth volume of the Natural History of the Tinien. — J. B. HODGKINSON, 15, Spring Bank, Preston, June 13th, 1870.

Captures of Lepidoptera at Witherslack.—On the morning of Monday, the 13th of last month (June), I left home for Witherslack, in Westmoreland, for the purpose of having a few days' collecting in that rather noted locality. I arrived there about noon, and made the "Derby Arms" head quarters, where I was at once installed in Mr. J. B. Hodgkinson's room, which I found replete with everything necessary for killing and setting specimens, &c. Unfortunately, during the five days I spent there, the weather was most unfavourable, a good part of the time being so wet, that I could scarcely get out to do anything, whilst there was but little sun during the whole of my stay. This was the more annoying, as in nearly every other part of the country the weather was beautifully fine. As a consequence, my success was very poor compared with what it might have been under favourable circumstances. The following is a list of the best species taken. *Chortobius Davus* on a heathy marsh about a mile to the back of the Inn, *Lycæna Agestis* and *Alsus* on the grassy slope in front of the Inn, *Chærocampa porcellus* a not uncommon visitor to sugared trees, *Lithosia mesomella* not uncommon among ling, *Arctia fuliginosa*, *Bombyx callunæ* (in larva state), *Nemoria viridata* beaten out of *Myrica gale*, *Iodis lactearia*, *Asthena luteata* and *candidata*, *Acidalia fumata* common on the heathy marsh, *Macaria liturata*, *Filonia pinaria*, *Aspilates strigillaria* in plenty in the same locality as *A. fumata*, *Ligdia adustata*, *Emmelesia albulata*, *Eupithecia venosata*, *pulchellata*, *castigata*, *vulgata*, and *exiguata*, *Melanthia ocellata*, *Cidaria russata*, *Eubolia palumbaria*, *Tanagra cherophyllata* common but local, *Leucania comma*, *Mamestra anceps*, *Apamea unanims* two at sugar, *Gramesia trilinea* var. *bilinea*, *Rusina tenebrosa*, *Aplecta nebulosa*, *Abrostola urticae*, *Ennychia octomaculata* on open ground as well as in the woods, *Pterophorus plagiodactylus* (?; this specimen is rather different from the usual type, Mr. Hodgkinson took a similar one on May 28th), *tephrodactylus* and *tetradactylus* and others. I do not remember any locality in which I noticed so many *Pterophori* as here. — GEO. T. PORRITT, Huddersfield, July 16th, 1870.

Under the sand on Yarmouth Denes.—Lying down by the side of the more elevated patches of Marram (*Ammophila arenaria*), and carefully drawing away the sand from round their roots, singular objects, closely resembling fungi of the genus *Clavaria*, became visible, attached by one end to the sheaths of the grass, and branched and sub-divided into rounded projections at the other end.

These are the silken tubes of the larvæ of *Anerastia lotella*, and are tightly stuffed with yellowish frass, except a small space next to the base, where is a chamber of tough silk, wherein the larva appears to reside when not engaged in devouring its favourite pabulum, the inner portion of the grass stem, which it hollows out, and of course withers.

The larva is very curious, yellow, tapering, with deeply divided segments (Mr. Buckler will, I hope, describe it). When full-fed it leaves the tube and spins a cocoon nearly, but perfectly disconnected. This also is very peculiar, being blunt or nearly flat at one end and pointed at the other, in fact, rather like a skittle pin. The pupa state lasts two or three weeks, the imago appearing in June and July.

Very different is the tube of *Crambus fascinelinus*, which I partially described last season, this being entirely composed of grains of sand loosely fastened together with silk, and therefore loose and very soft. It is very much larger too, some being with the large bag of loose frass four or five inches long, and the mouth frequently embracing the plant of *Triticum junceum* upon which the larva is feeding.

This plump, active, black spotted larva, with its ample tube, gives one a respectable idea of the larvæ of this difficult group, and also seems to give a key to their real habits.

Unfortunately it is so restless in confinement as to be very difficult to rear, and if disturbed from its tube disdains to make another. The cocoon which I have before described is much tougher and firmer than the tube, and, like it, lined with silk. It is at least three times as long as the pupa generally.

Still under the sand, and sometimes among the same grass, but more frequently among sea sand-wort (*Arenaria peploides*) and sea violet (*Viola Curtisii*) and at no great depth, are to be found at the same time (June and July) larvæ of *Agrotis cursoria* in plenty, with those of *A. tritici*, and occasionally the orange spotted ones of *A. praeceox*, all of them stiff and lazy looking things when turned out, but active enough in all conscience when fairly aroused to a sense of their situation.

Doubtless these would be found in swarms at night, feeding especially upon *Arenaria peploides*, the gnawed appearance of which proclaims plainly enough that it is a favourite food.

I have simply given an idea of what is to be found under the sand at one period of the year, but if the time could be spared at other seasons, much more might be found under and upon the barren surface, not only among the other sandhill-Noctua, *Agrotis vallisera*, *Leucania littoralis*, *Mamestra albicollis*, &c., but in the smaller groups; *Gelechia desertella* and *marmorea* swarm in myriads, *G. distinctella*, *velocella*, *umbrosella*, *mundella*, and *picella*, are to be found, and *Catoptria microgramma* and *expallidana* are not very rare.—CHARLES G. BARRETT, Norwich, 7th July, 1870.

Description of the transformations of Erebia Medea (Blandina).—That I am able to offer a complete history of the transformations of this species is another example of the proverb, "Union is strength."

For not to one only, but to several of my friends, am I indebted for help. To Dr. White and Mr. Longstaff for the eggs, plentifully supplied to myself and Mr. Hellins; to Mrs. Hutchinson and to Miss Pasley for sending me the surviving larvæ reared by them over the winter, when I had myself entirely lost all my stock.

As far as I can ascertain, only four larvæ have come to maturity out of two hundred hatched last year, the vast majority dying in hybernation, and at the first spring moult; it can well be understood, therefore, how dear the satisfaction is won—after such loss—of securing this species.

The eggs were sent to us at the end of August, 1869; the larvæ hatched during the first week in September; fed and grew slowly till the winter; hybernated when between two and three lines in length; resumed feeding in March or April; and attained full growth between the end of May and the middle of July. The food has for the most part been *Aira præcox*, but Mr. Hellins has found that *coespitosa* was eaten as the larva approached maturity. One imago has already emerged on July 15th.

The egg may be called large for the size of the fly, and is nearly globular—though somewhat ovate—in shape, and placed on end; the shell is glistening, and ribbed, but not deeply, with about thirty longitudinal ribs, and with very shallow transverse reticulations; in colour, pale greenish-yellow; afterwards, pale pinkish-grey, speckled with claret-brown.

The larva when small has the head large and rounded, is stout forwards, and tapers from the middle to the tail; is greyish in colour, with reddish-brown dorsal, sub-dorsal, lateral and spiracular lines, the lateral being broader than the rest; the spiracles black with another brown line below them; the skin covered, though not very closely, with short, stout, curved, pellucid bristles.

It hybernates at rather over the length of two lines; creeping down the blades of grass, and hiding in the thickest parts of the tufts. Soon after commencing to eat again in spring, the larva assumes somewhat of a greenish tint, but after a moult the grey returns again.

In May one was described which had then assumed the last dress. In length it was three-quarters of an inch, stout in proportion, thickest at about the fourth segment, the back tapering somewhat in a curve, the belly flattened, with the pro-legs placed well under it; the head globular, scarcely narrower than the second segment; the anal segment bearing two not very prominent blunt points: each segment bearing on the back five transverse ridges, studded with minute raised warts, emitting fine short tapering bristles; the head also covered with still more minute bristle-bearing warts. The ground colour is pale drab, the warts being pale whitish-brown; the dorsal stripe is blackish-brown, most intense on the hinder segments, and enclosed by two lines of a paler drab than the ground colour; there is a broad sub-dorsal stripe of paler drab, growing narrower as it approaches the anal point, edged above with a greenish-brown thread, and below with blackish or brownish dashes, that almost form a continuous line, the interruptions occurring at the beginning of each segment; below this come two thin pale lines, above the lower of which are situated the circular black spiracles, each in a little puffed eminence; this lower line in fact forms a ridge, edged below with an interrupted brown line; the belly and legs are of a somewhat warmer tint of the ground colour of the back.

The larva thus described continued to grow till June 4th, when it was seven-eighths of an inch long, and stout in proportion, with its back deeper in colour than the sides; and presently after this its colouring grew paler, with a pinkish suffusion spread over it, and by June 22nd it had changed to a pupa, unattached, but placed in an upright position amongst the grass near the ground.

Throughout its whole larval life this species is very quiet, and even sluggish.

The pupa is nearly five-eighths of an inch in length, the wing-cases long, the abdomen plump, thickest in the middle, tapering to the tail, and ending in a blunt flat spike; the back of the thorax is rounded, the head and eye-pieces prominent.

At first the head, thorax, and wing-covers were semi-transparent, and of a pinkish-grey tint, the abdomen ochreous, with dark dorsal stripe and other lines, and spiracles also as in the larva; but by July 10th, the eyes became black; the thorax, antennæ-cases, and wing-covers, after passing through an opaque cream-coloured stage, finally changed to a dingy dark pinkish-brown.

The butterfly, a very fine male, came forth on July 15th; but at the present date Mr. Hellins has a larva only just beginning to change.—WM. BUCKLER, Emsworth. 19th July, 1870.

Postponement of Dr. Staudinger's visit to England.—Dr. Staudinger, who has purchased the rich collection of *Lepidoptera* of the late Herr Julius Lederer, and has lately been to Vienna to superintend its removal to Dresden (where it has now arrived in good order), finds that he shall now be unable to visit England this summer, but he hopes with certainty to be able to come over here *next year*. The new edition of the catalogue is now in the press.—H. T. STANTON, Mountsfield, Lewisham, July 8th, 1870.

Obituary.

A. H. Haliday.—With profound regret we announce the decease of this gentleman, early in July, at Lucca, in Italy, which town he had since many years made his home. A more extended notice of his life and works will probably appear hereafter in our pages.

Alfred Haward.—The Entomologists of London have to lament the premature decease of Mr. Haward, who was well known among Coleopterists, and universally respected for his genial and thoroughly unassuming disposition. He died at his residence, near Croydon, about a fortnight after joining the Entomological Club on the 1st of July last, at their excursion to Weybridge, and we imagine no one then present had any idea that his end was so near. Mr. Haward's business occupations always prevented him giving full scope to his bent for entomology; but of him it can truly be said, that no man was more free from the petty jealousies that too often render our favourite study ridiculous in the eyes of the uninitiated; and, as a consequence, no man had fewer enemies.

ENTOMOLOGICAL SOCIETY OF LONDON, 4th July, 1870; A. R. WALLACE, Esq., F.Z.S., President, in the Chair.

The Rev. F. A. Walker, of Wanstead, and E. M. Seaton, Esq., were elected Members.

Mr. Meek exhibited three species of *Dianthæcia* from Ireland, viz., *compta*, *conspersa*, and *Barrettii*; also, from the Isle of Man, *D. conspersa*, and an insect which Mr. Stainton considered to be a peculiar dark variety of *Gluphisia crenata*, a very rare British species.

The Hon. T. De Grey exhibited examples of *Oxyptilus latus*, from Brandon, Suffolk.

Mr. Tegetmeier sent for exhibition examples of nature-printing as applied to Butterflies and Moths. These remarkably fine exponents of this method were on sale by a well-known London firm of printsellers, who had been under the idea that they were produced by some new process of chromo-lithography.

Mr. Blackmore exhibited *Lepidoptera* and *Coleoptera* captured by him at Tan-giers during last winter. Among them was a long series of the true *Anthocharis Eupheno*, Linné. A beetle, *Pimelia scabrosa*, was remarkable for its monstrous antennæ, these organs being furcate.

Mr. F. Moore exhibited cocoons of a species of *Sagra* from Bombay, collected by Mr. Newton. These cocoons were placed, many together, in large galls, or swellings of the stems, of *Cocculus macrocarpus*, a creeping plant.

The President read an extract from a letter from Mr. Everett, from Sarawak, remarking on cases of mimicry in some spiders and caterpillars, these creatures having a most deceptive resemblance to pieces of bird's dung.

Mr. Müller exhibited galls on *Ammophila arundinacea* found by Mr. Trail, near Aberdeen.

Prof. Westwood made some observations on certain minute *Acari*, especially with reference to a species which causes the minute galls on the leaves of the pear trees. This species, together with that infesting the buds of black-currant, and others, formed a distinct group distinguished by the possession of only four legs, and he proposed to institute for their reception a genus under the name of *Acarellus*, the pear species being *A. pyri*. Mr. Müller suggested that these forms were identical with those described by Dejean under the name of *Phytopus*.

Mr. Jenner Weir communicated "Further observations on the relation between colour and edibility of *Lepidoptera* and their larvæ."

Mr. A. G. Butler read a "List of species in a collection of Butterflies sent by Mr. Ansell from Kinsembo, S.W. Africa."

Mr. H. W. Bates read "Contributions to the Insect-fauna of the Amazons (*Coleoptera*; *Longicornia*, Fam. *Cerambycidae*).

Mr. F. Walker communicated a "List of *Hymenoptera* collected by Mr. J. K. Lord in Egypt and Arabia."

ON CERTAIN BRITISH HEMIPTERA—HOMOPTERA.

BY JOHN SCOTT.

(Continued from p. 29.)

Descriptions of new species of the Genus *Liburnia*, Stål.

Species 6.—*LIBURNIA* SCOTTI.

Delphax pallidulus, Marshall, Ent. Mo. Mag., i, 201, 3 (1865).

Kelisia Scotti, Fieb. (M.S.).

Developed form, ♂ and ♀. Pale ochreous. *Abdomen* yellow, genital segment posteriorly snowy-white.

Head: cheeks, ocelli, and a spot lower down next the inner margin, black.

Thorax: pronotum with a small black spot at the posterior angles. *Elytra*: corium with an ovate black spot at the apex, or continued as a more or less broad line along the middle nerve, as far as the transverse nerves. *Sternum* ochreous. *Legs* ochreous. *Claws* dark brown.

Abdomen pale ochreous, margins of the segments above more or less black; genital segment snowy-white.

Var. a. A somewhat triangular spot at the apex of the clavus, a short, narrow streak along the suture near the base, and an oval spot at the apex of the corium black.

Var. b. Nearly the entire elytra black; the oval spot at the apex darkest; the entire margin, a patch near the base of the clavus, and another in a line with the transverse nerves, pale ochreous.

Length $1\frac{1}{4}$ — $1\frac{3}{4}$ line.

This is not, as was supposed by the Rev. T. A. Marshall at the time he described the insect, the *D. pallidulus*, Boh. The latter insect is smaller, paler, and without a vestige of dark markings on the elytra. We have compared it with a true type of the insect, described by Boheman, kindly forwarded to us by Dr. Stål, to whom we would here express our thanks for this, as well as for types of other of Boheman's species.

Local, but abundant where it occurs. Near Leicester (Marshall); Glanvilles Wootton (Dale); Sallow pit, Lee, and Abbey Wood Marshes, on *Arundo phragmites* in September and October.

Var. b is much rarer than the other forms.

Species 13.—LIBURNIA BOLDI, n. s.

Undeveloped form, ♀.

Head: crown yellow, the two basal foveæ distinct and somewhat deep: *keels* white, interstices black, as are also those of the forehead. *Face* and *clypeus* yellow: *keels* of the former white, the middle one on each side, and the side ones interiorly narrowly margined with black. *Antennæ* brownish-yellow. *Eyes* brown.

Thorax: *pronotum* and *scutellum* yellow, with a greyish shade, *keels* distinct, paler than the disc, side *keels* of the former almost reaching to the posterior margin. *Elytra* yellowish-grey, barely covering half of the abdomen, posterior margin rounded, nerves distinct but not prominent, nor granulated: *clavus*, apex with a short, narrow, dark brown streak. *Legs* yellow, with a slight fuscous shade: *thighs*, third pair, with a black longitudinal streak on the upperside: *claws* black.

Abdomen above, brownish-yellow, darker on the sides, side margins orange-yellow, exterior margin of the segments black, underneath black or pitchy-brown, margins of the segments orange-yellow, genital segments brown.

Length 1 line.

Most nearly allied to *D. distincta*, Flor, but the face between the keels is not black, the elytra not so yellow, nor the marginal nerve white, as in that species. On the other hand *distincta* is without the short dark brown streak at the apex of the clavus.

A single ♀ example of this insect was captured by Mr. T. J. Bold, after whom we have much pleasure in naming it, in Seghill Dene, near Newcastle-on-Tyne, in May.

Species 14.—*LIBURNIA CAPNODES*, *Fieb.* (M.S.).

Developed form, ♀. Keels of the head and face concolorous.

Head pale brownish-yellow; *crown*, the three foveæ distinct, the two basal ones deepest. *Face*, *clypeus*, and *cheeks* pale brownish-yellow. *Antennæ* pale brownish-yellow, 2nd joint somewhat fuscous. *Eyes* brown.

Thorax: *pronotum* and *scutellum* pale brownish-yellow, side keels of the former curved round just beyond and running parallel with the posterior margin of the eyes; keels of the latter fine but distinct, disc depressed posteriorly. *Elytra* pale smoky-yellow, almost transparent; all the nerves brown, distinctly and regularly granulated with black: *clavus*, apex of the marginal nerve blackish. *Legs* pale fuscous-yellow; *tarsi*, apex of the 3rd joint and claws brown.

Abdomen above, dark brown, paler towards the apex; underneath, brownish-yellow, lower margins of the segments more or less broadly black, segments themselves with two or three scattered black punctures; genital segments and ovipositor brownish-yellow. Length $1\frac{1}{2}$ -line.

Unlike any other species of the genus, and will be at once recognised by the uniform brown nerves, and minute, but distinct, black granules thereon.

A single ♀ example taken somewhere in this neighbourhood in October, 1863, but the locality not recorded.

Species 15.—*LIBURNIA SIGNORETI*, *n. s.*

Undeveloped form, ♂.

Head yellow, with a slight fuscous shade; *crown*, the three foveæ distinct, the two basal ones deepest. *Face* and *clypeus* yellow, *keels* slightly paler, middle keel of the former furcate on the forehead, a little above the lower margin of the eyes; *cheeks* yellow; *ocelli* black. *Antennæ* yellow, with a slight fuscous shade, 2nd joint nearly twice as long as the 1st, reaching to beyond the clypeus suture. *Eyes* black.

Thorax: *pronotum* yellow, with a slight fuscous shade, *keels* distinct, side keels curved outwardly and terminating before reaching the posterior margin; *scutellum* yellow, with a slight fuscous shade, keels distinct, apex finely wrinkled transversely. *Elytra* pale fuscous-yellow, reaching to beyond the apex of the abdomen, and somewhat narrowed posteriorly, posterior margin rounded; nerves brown, prominent, with distinct darker granules placed somewhat thickly and at regular intervals, the 1st nerve, next the anterior margin, as far as the bifurcation, without or with only one or two granules. *Legs* dark fuscous; *claws* black.

Abdomen black, base broadly yellow, last segment margined with white; genital segment black. Length 1 line.

Rather larger and stouter than *D. adela*, Flor, to which it is allied, but the distinct dark granules on the elytra, and the different form of the styloid processes easily distinguish it from the last named.

Taken in the marshes near Abbey Wood, in June, and named after Dr. Signoret, for his great kindness in assisting us by the loan of examples of several species of this genus.

Species 17.—LIBURNIA MELANOPACHYS.

Delphax melanopachys, Fieb. (M.S.).*Undeveloped form*, ♂.

Head: *crown* clear brown, the three *foveæ* deep and distinct, *keels* acute and prominent. *Face* (except the forehead), *clypæus*, and *cheeks* black. *Antennæ* clear brown, 2nd joint about $1\frac{1}{2}$ time longer than the 1st.

Thorax: *pronotum* clear brown, *keels* acute and prominent, posterior angles broadly black; *scutellum* clear brown, *keels* distinct, sometimes the middle keel and a narrow margin on either side, especially towards the apex, blackish; sides, beyond the side *keels*, black. *Elytra* about two-thirds the length of the abdomen, lacquer-yellow, shining, somewhat transparent, nerves prominent, unpunctured; posterior margin rounded. *Sternum* black. *Legs* yellow; *tarsi*, 1st and 2nd pairs, brown, 3rd, yellow.

Abdomen above, pitchy-brown; underneath black; genital segment black.

Length, ♂, 1 line.

Altogether a larger species than *L. venosa*, to which it bears a great resemblance, but it is at once to be distinguished from it by the characters on the pronotum and scutellum, as given above.

The peculiar lacquer-yellow colour of the elytra is only met with, at least amongst British species, in *L. venosa*, and the present insect, but in the former it is not nearly so clear as in the latter.

The discovery of this interesting species is due to Mr. T. J. Bold, who took a single ♂ specimen in Gosforth Woods in October.

Species 25.—LIBURNIA FIEBERI, n. s.

Undeveloped form, ♂.

Elytra: posterior margin with two white oblong spots, the nerves faintly spotted with black.

Head: *crown* yellow, the three *foveæ* distinct, basal ones deepest; forehead yellow.

Face fuscous-black; *keels* yellowish, base and apex narrowly margined with yellowish, and on each side of the middle a transverse yellowish line; *cheeks* fuscous-black. *Antennæ* yellow, 2nd joint stout, somewhat brownish towards the apex.

Thorax: *pronotum* brown, beyond the side *keels* black, posterior margin brown; *keels* acute, prominent; *scutellum* brown, beyond the side *keels* black; *keels* acute, prominent. *Elytra* pitchy-brown, not covering half of the abdomen, posterior margin truncate, angles rounded; *clavus* yellowish-white, scutellar margin narrowly pitchy-brown, apex with a large, somewhat oval, black spot; *carium*, posterior margin white, divided in the centre by a black spot, nerves faintly spotted with black. *Sternum* dark brown. *Legs* pale fuscous-yellow; *tibiae*, 1st pair slightly darker before the apex; *thighs*, 3rd pair, picuous; *tibiae* fuscous-yellow, darkest towards the base, apex and spines pale yellow; *tarsi* yellow, 1st joint, except the apex, pale fuscous.

Abdomen above, brownish-yellow, with a black streak along the sides; side margins black, with a small yellow spot at the lower angle of each segment; genital segment yellow, sides piceous; underneath black, genital segment yellow.

Length 1 line nearly.

Undeveloped form, ♀.

Very similar to the ♂ in all respects, except that the posterior margins of the segments of the abdomen, on each side of the dorsal line, are black.

Length 1 line.

Larger than *L. lepida*, and at once to be distinguished from it by the absence of the minute white spots on the pronotum, and the less prominent black spots on the elytra.

We know of only two examples: one (♀) taken by Mr. T. J. Bold, in Gosforth Woods, near Newcastle-on-Tyne, in October; and one (♂) taken at Abbey Wood, in July (Scott).

Species 29.—LIBURNIA NIVEMARGINATA.

Delphax thoracicus, Marshall, Ent. Mo. Mag., iii, 269 (1867).

Undeveloped form, ♂.

Elytra black, posterior margin white. *Abdomen* black, last segment above, and the genital segment, margined with white.

Head brown; *oculi*, the two basal foveæ distinct but not deep, the anterior one faint. *Face* and *clypeus* dark brown; *keels* paler, on the forehead almost obsolete; *cheeks* brown. *Antennæ* brownish-yellow.

Thorax: *pronotum* white, the anterior margin brown; *keels* distinct; *scutellum* yellowish-white, middle keel more distinct than the side ones. *Elytra* black, shining, half the length of the abdomen, posterior margin rounded, white, nerves prominent. *Legs* fuscous-brown; *tibiæ* and *tarsi* paler, 3rd joint of the latter, black.

Abdomen black, shining, margin of the last segment above, white, side margins very narrowly pale; genital segment above, and the posterior margin on the sides, narrowly margined with white.

Undeveloped form, ♀.

Scutellum yellowish or white. *Elytra* pale brownish, posterior margin white. *Abdomen* brown, darkest on the sides. All the other characters as in the ♂.

Length, ♂, 1; ♀, 1½ lines.

Most nearly allied to *L. leptosoma*, but it is larger than that species, and differs from it in the absence of the pale sutural region of the elytra, and by having the scutellum white.

Taken by the Rev. T. A. Marshall at Wimbledon, in September, on marshy places. He referred it to the *D. thoracicus*, Stål., but as that insect is merely the developed form of the ♀ of *marsta*, Boh., the above name has been proposed instead thereof.

Species 33.—LIBURNIA DALEI, *n. s.**Undeveloped form, ♂.*

Head yellow : *crown*, the two basal foveæ distinct, the anterior one appearing as a deep puncture. *Face* widest below the eyes, the middle keel distinct but not prominent : *clypeus*, middle keel distinct. *Antennæ* yellow, second joint twice as long as thick at the base. *Eyes* purplish.

Thorax : *pronotum* yellow, *keels* distinct ; *scutellum* deep black, shining, *keels* fine but distinct, sides and apex narrowly yellow : *elytra* yellow, not covering half of the abdomen, posterior margined rounded, nerves not granulated. *Sternum* yellow : *mesosternum*, sides black, apex narrowly yellowish. *Legs* yellow ; *coxæ* of all the pairs anteriorly black : *tarsi*, apex of the third joint and claws black.

Abdomen black, shining, side margins and a very narrow dorsal line yellow, two last segments clear yellow ; genital segment above clear yellow, sides and underneath black. Length $\frac{3}{4}$ line.

♀ Unknown.

We are not acquainted with any species with which this insect is likely to be confounded.

The description has been drawn up from a single ♂ specimen in the collection of Mr. J. C. Dale, who has at all times been ready to aid and assist us, and after whom we have much pleasure in naming it. It was taken at Lulworth, Mr. Dale believes, in August, 1832.

Species 38.—LIBURNIA DOUGLASI.

Delphax Douglassi, Fieb. M.S.

Undeveloped form, ♂.

Head : *crown* and forehead yellow ; the three foveæ on the former distinct but shallow. *Face* and *clypeus* black, the former between the keels irregularly spotted with white ; *cheeks* black, along the margin of the face, with three or four white spots. *Antennæ* brownish-yellow.

Thorax : *pronotum* yellow, *keels* somewhat indistinct ; *scutellum* pale brown, beyond the side keels dark brown, *keels* distinct but not prominent. *Elytra* brown, more than half the length of the abdomen, posterior margin almost truncate, angles rounded, nerves fine but distinct, not granulated. *Legs* yellowish or pale brownish-yellow, with a fuscous shade.

Abdomen black ; genital segment above brownish-yellow, sides black.

Length $\frac{3}{4}$ line.

Totally unlike either of the two other species belonging to this section, and at once recognizable by its brown elytra. A single ♂ example was taken by Mr. Douglas at Folkestone, in September, 1862.

Genus 4.—DICRANOTROPIS, *Fieb.*

Head almost square.

Undeveloped form, ♂. Keels of the head and face white, interstices black. Crown, pronotum and scutellum greyish- or whitish-yellow, the latter with a black spot beyond the side keels. Elytra greyish-white, apex of the clavus with a short black streak. Abdomen black, with a narrow more or less interrupted white dorsal line. Genital segment large, the sides much projected and black; upper portion white1. *hamata*, Boh.

A common species and easily recognised by its curiously formed genital segment.

Genus 5.—STIROMA, *Fieb.*

Head transverse, the anterior margin of the crown but a little way in front of the eyes.

Undeveloped form, ♂. Head, pronotum and scutellum yellow, the two latter somewhat brownish. Face at the base with a black cuneate patch on each side of the furcate middle keel. Pronotum and scutellum each with a black patch beyond the side keels, posterior margin of the former pale. Elytra greyish-yellow, not covering half of the abdomen. Abdomen piceous, on the back pitchy-brown.....1. *affinis*, Fieb.

Undeveloped form, ♂. Face at the base with a black patch on each side of the furcate middle keel, the patches generally united into one. Scutellum only with a black patch beyond the side keels. Elytra as in the former species. Abdomen castaneous, darker on the sides2. *nasalis*, Boh.

The easiest character by which to separate these species is in the markings on the pronotum and scutellum, whilst an examination of the structural differences of the styloid processes will establish their distinctness. In the former, the apex of these is somewhat of a fish-tail shape, and in the latter aculeate and curved.

Undeveloped form, ♂. Head and pronotum bright yellow, the latter frequently darker between the side keels next the posterior margin. Scutellum and elytra black, the latter covering more than half of the abdomen. Abdomen black or yellow. Genital segment above generally brownish or yellow.....3. *pteridis*, Boh.

Not readily confounded with any species that we know. The middle keels of the face are almost obsolete.

Undeveloped form, ♂. Head yellowish or brownish-yellow. Keels of the head and face white. Pronotum generally white. Scutellum yellow. Elytra more or less dark piceous, very narrowly somewhat paler along the scutellar region, posterior margin white. Abdomen black. Genital segment black, posterior margin above white.....4. *albomarginata*, Curt.

This is the *D. adelpha* of Flor. It is easily separated from similar species of *Liburnia* through its having two middle keels to the face.

Undeveloped form, ♂. Pronotum white, anterior portion clear pale yellowish-brown. Scutellum clear yellowish-brown, sides and apex white. Elytra clear pitchy-brown, shining, posterior margin white. Abdomen black, margin of the last segment white. Genital segment on the sides black, above and posterior margin white5. *mæsta*, Flor.

Somewhat larger than the last species, but extremely difficult to separate from it. The different form of the opening of the genital segment, when viewed from behind, the white margin to the last abdominal segment, and the white upper portion of the genital segment are the most striking outward characters whereby to distinguish this insect from *S. albomarginata*.

My task, as far as my knowledge of the species of *Delphacidæ* of this country is concerned, is now completed; and, although my investigation of this family, both anatomically and otherwise, has enabled me to treble the number of species hitherto recorded as British, yet I am far from believing that these are all its representatives to be met with in this country. Their minute size and great resemblance to each other in many instances (as noticed below), and their extremely active habits, rendering them so difficult of capture in the net, have led me to this conclusion. From Ireland I have not seen a single individual; and as to Scotland, whence I believe many additions will yet come, the few observers who have done anything have either been limited as to time, or merely taken such species as fell in their way while collecting insects of other Orders. Wales pairs with Ireland, and the South-coast and Isle of Wight only return one or two members.

Northumberland furnishes its quota, but the London district as yet bears off the palm, and Dorsetshire "labors hard to swell the list with the good things it yields." Except Berwickshire, these are the only places from which I have seen any examples of the *Delphacidae*, and what may be expected from the yet unexplored parts. I leave my readers to judge for themselves.

Amongst the continental species most likely to be added to our lists in this group are *Delphax crassicornis*, Fab. (see genus 2. p. 24); *Liburnia stenoptera*, Flor, closely allied to *smaragdula* and *unicolor*; *L. hyalinipennis*, Stål, like a small *neglecta*; *L. paryphasma*, Flor, belonging to the *leptosoma* group; *L. straminea*, Stål; *L. modesta*, Fieb.; *L. flaviceps*, Fieb.; *L. limitata*, Fieb.; *L. protrusa*, Flor; *L. paludosa*, Flor; *L. flaveola*, Flor; *L. spinosa*. Mink (somewhat like *L. cognata*, but with a black abdomen, or with a row of yellow spots down the middle of the back); *L. Bohemanni*, Stål, somewhat resembling *pullula*, but larger, and *Metropis Mayri*, Fieb., a black species with a head shaped like that of *L. mesomelas*.

In conclusion, I consider it an extremely interesting point that the similarity of many of the species is so great that they can be broken up into what I call parallel pairs. Indeed, so similar are the creatures of each pair, both in the developed and undeveloped form (*i. e.*, with complete elytra and wings, or with incomplete elytra and no wings), that, except by the form of the genital segment and the styloid processes, it would be next to impossible to separate them. With the exception of the first-named, and of *L. basilinea*, Germ., all the species are British, and their diagnostic characters have been already given.

They are as follows:—

Delphax crassicornis, Fab., and *D. pulchella*, Curtis.

Liburnia fuscovittata, Stål, and *L. lineola*, Germ.

„ *smaragdula*, Stål, and *L. unicolor*, H. Schf.

„ *pellucida*, Fab., and *L. discolor*, Boh.

„ *speciosa*, Boh., and *L. basilinea*, Germ.

„ *Fieberi*, Scott, and *L. lepida*, Boh.

„ *leptosoma*, Flor, and *L. niveimarginata*, Scott.

„ *cognata*, Fieb., and *L. exigua*, Boh.

Stiroma affinis, Fieb., and *S. nasalis*, Boh.

„ *albomarginata*, Curtis, and *S. mæsta*, Flor.

The next paper will comprise the British species of *Cixiidae*.

(To be continued.)

A PRELIMINARY ACCOUNT OF *CECIDOMYIA DORYCNII*, SPEC. NOVA,
AND OF *CALLIMOME DORYCNICOLA*, SPEC. NOVA, ITS PARASITE.

BY ALBERT MÜLLER.

The materials at my command concerning this *Cecidomyia* are exceedingly fragmentary, and hence my notice partakes of the same character. If, nevertheless, I bring it forward, my wish to call attention to the little we know of southern gall-flies must be my excuse. Thanks to Mr. Stainton, the *Micro-Lepidoptera* of the "sunny south" have had their day of reckoning up; that of the *Micro-Diptera* has yet to come.

Food-plant: *Dorycnium suffruticosum*.

Locality: Mentone; April (Mr. H. T. Stainton).

Egg: laid in the axil of the stem, from whence the bundle of verticillate leaves ought to spring, and where a gall, consisting of the transformed leaves, appears instead.

Gall: monothalamous, as long as the full-grown normal leaf, oval, bud-shaped, with a pointed and sometimes curved apex, standing stiffly on a short peduncle; ground-colour ashy-grey, clothed with a silver-white pubescence, which is longer than that of the normal leaf; interior of the oval upright cell dark olive-green and smooth.

Larva and pupa unknown. These two stages are passed inside the gall, as proved by the armed basis of the feeler-cases of the pupal skin (noticed below), which aids the mature pupa to pierce the gall.

Pupal integument: length 3-4 millim.; slender (♂) or stout (♀); pale brown, except the limbs, which are almost transparent, head small, deeply imbedded; feeler-cases detached, gracefully curved back over the thorax, their tips reaching as far as the first abdominal segment, their united basis is protruded into a double spur, beneath which there appear two shorter spurs, standing in a line; thorax slightly arched, polished; no notch between it and the abdomen; wing-cases reaching to the middle of the third abdominal segment; outer and central pair of leg-cases equally long, stretching just over the fifth abdominal segment; middle pair a little shorter.

Imago: expans. alar. 9 millim. I have only seen fragments, including wings, by which it appears that *Cec. dorycnii* belongs to the sub-genus *Asphondylia* of Loew, which location its œconomy, so far as known, and the shape of the pupal skin already point out. It is closely

allied in neuration, and in the shape of the pupal spur, to *A. sarothamni*, Loew, which passes its metamorphosis in bud-shaped galls on the twigs of *Sarothamnus scoparius* (Loew, Pr. d. Pos. Gymn., 1850, s. 38, 48).

CALLIMOME DORYCNICOLA, spec. nov.

Femina: viridis, nitens, antennis nigris, pedibus pallide fuscis, alis hyalinis, oviductu abdomine paullo longiore. Corp. long. sine oviductu, 3 millim.; alar. exp. 7 millim.

The larva of this parasite nestles in the body of its victim, gradually consuming it, until scarcely more than the skin is left, yet sometimes the Cecidomyian larva contrives to assume the sculptured pupal state all the same, but there its resistance is at an end; the *Callimome* passes its metamorphosis in the Cecidomyian pupal skin, and, when ready for flight, pierces the Cecidomyian skin between the wing-cases, and afterwards the gall itself, through which it drills a neat round hole.

South Norwood, S.E.: 11th July, 1870.

ON THE METAMORPHOSES OF *MANTISPA*.

BY FRIEDRICH BRAUER.

[Extracted and translated from the *Verhandlungen der zoologisch-botanischen Gesellschaft in Wien*, Band xix (1869).]

In 1851, I obtained a female of *Mantispa styriaca*, Poda (*pugana*, L.), which deposited eggs attached to a peduncle, as in *Chrysopa*, and in 21 days the larvæ appeared. These larvæ refused nourishment, yet in the following spring I found them yet living in the glass in which they were contained, but I could not understand what food to offer them.

In June, 1855, I found in the earth, near Mödling, a cocoon with double envelope which produced a *Mantispa*; and in the autumn of the same year obtained larvæ from eggs, which only served me as alcoholic specimens. I had thus obtained a knowledge of the egg, of the form of the young larva, and of the pupa, but the manner of life yet remained in the dark.

Seven years later, a lucky find brought amazement to my friend Rogenhofer. On the 21st May, he found on the Hundsheimer Berg, near Hainburg, a spider belonging to the rich genus *Lycosa*, which was guarding its egg-bag in a hole in the earth, more than an inch in depth. He took the egg-bag with him, in the hope of breeding therefrom para-

sitic *Hymenoptera*. One morning he saw, to his great astonishment, a pupa of *Mantispa* emerge from the bag. Here then was the mystery nearly solved. The egg-bag contained inside the second yellowish cocoon of the *Mantispa* between two spun-together remains of spiders' eggs.

After this I lost no opportunity of obtaining *Mantispa* larvæ from the egg, and placed them in the egg-sacs of various spiders; but they all died without eating.

Through these observations, I came almost to the conclusion that an analogy existed between Fabre's remarks on the habits of the larva of *Melœ* and that of *Mantispa*. The sequel proved that much similarity exists between these two genera.

The failure of the last experiments resulted from ignorance, not only of the right egg-bags, but also of the proper time to place the larvæ with these receptacles. The observations seemed, however, to prove that the larvæ hibernate at large, and, after a fast of eight months (from September until April of the following year), first enter the spider's bag. Without doubt there was an awkward interval, which I had not clearly understood, and which all earlier observations failed to elucidate. (It is known that the larvæ of *Sitaris* fast seven months before they infest the bees.)

A collection of larvæ which I bred from the egg in August, 1868, hibernated on a piece of bark, placed closely together, in a glass filled with earth about an inch in depth, and which was covered with paper. Next April they began to disperse. At this time, I obtained, with much trouble, 20 examples of *Lycosa inquilina*, Koch, with their large white globular egg-bags (I may remark here that the larvæ will not enter the small green bags of *Lycosa fluviatilis*). These I threw into the glass with the *Mantispa* larvæ, and had not long to wait before many of them entered the bags. Here they did not begin to feed immediately, but often rested a week, apparently waiting for some special condition of the eggs; one could see them unaltered through the walls of the bag.

On the 26th April the larvæ commenced moving, and on the 17th May I opened an egg-bag, and found therein the larva yet in its first skin, and also a number of young dead spiders. After the moult, which soon followed (the only one which I observed, save that before the change to pupæ), the larvæ altered their character entirely, and took the form of maggots with rudimentary legs, their movements being those of a footless bee-larva, the short, thick, leg-stumps serving them

no longer as a means of locomotion. The head is now very small, transversely oval, with an eye-spot (containing six simple eyes) on each side. In this condition the larvæ lie curved up in a convolution of matted bodies of spiders, and egg-shells, which they slowly and clumsily wind. They reach a length of 7 to 10 millimètres, and on the 27th May I found a larva of this size. The pupation of the full-grown larva occupies a long time as in *Chrysopa* and *Myrmeleon*. The larva spins first a yellowish or greenish, round or oval, cocoon inside the *Lycosa* egg-bag, and seems to lie unchanged therein during almost a fortnight. The change follows in the middle of June, and in four weeks the imago appears.

If a mother spider is placed with the egg-bag, it does not attack the *Mantispa* larvæ, but leaves them uninjured in its nest, although it carefully protects it against larger enemies.

[The foregoing observations by my friend, Herr Brauer, which I have freely translated and abbreviated, are an example of the patience and perseverance with which he works out the life-history of an insect—one of a series of many similar studies by him of the development of various *Neuroptera* and *Diptera*. The paper concludes with a careful comparison of the so-called “hyper-metamorphosis” of *Melœ*, *Cecidomyia destructor*, &c., &c., with the history of *Mantispa*, a dissertation too long for reproduction here. Herr Brauer has solved a perplexing problem in European *Neuroptera*; and it is reasonable to suppose that all the numerous species of exotic *Mantispa* have similar habits. Some of our more observant foreign collectors will probably test this supposition. A species of the allied genus *Trichoscelia*, which inhabits South America, is known to infest the large papyratious nest of a honey-making wasp (*Myrapetra*); and some years since I was in the insect-room in the British Museum when a section was made of a newly-acquired nest of this nature. In this nest were numerous living imagos and pupæ (free and in cocoon) of *T. varia*, Walker (*Myrapetrella*, Westwood), but memory does not serve me as to the existence of larvæ. There can, however, be but little doubt that these also undergo a similar metamorphosis—first being long-legged and attenuated, living free, afterwards becoming thick, almost footless grubs, parasitic upon the wasps. In what can consist the protective powers possessed by these *Mantispidæ*?—powers which seem to act as an enchantment on such eminently predaceous animals as spiders and wasps, inasmuch as these freely harbour guests that prey openly upon their progeny.—R. McL.]

Captures of Coleoptera.—A day or two at Llangollen, in the early part of June, produced a few pretty good things. From hazel I beat a pair of *Telephorus unicolor*, and *Cryptocephalus fulcratus* (*flavilabris*, Wat. Cat.); also, under similar circumstances, *Gonioctena pallida*, sparingly; whilst a hedge composed of maple, hazel, thorn, and elm yielded *Pyrrochroa coccinea*, *Opilus mollis*, *Clythra 4-maculata*, *Telephorus alpinus*, *Clytus mysticus*, *Hedobia imperialis*, &c.

On the flowers of umbelliferous plants *Pachyta 8-maculata* appeared rather freely, together with a few specimens of *Ædemera cærulea*. Sweeping met with but indifferent results, the only noteworthy capture being a pair of *Sitones cambricus*.

Running on a pathway, a single example of *Lebia chlorocephala* sported its brilliant colours, and in a rotten willow stump *Sinodendrum* was in great numbers.

On a mountain road, under very dry horse-droppings, I met with a single ♂ specimen of *Aleochara ruficornis*; and, under bark from an old rail, three specimens of *Hypophlæus depressus*.

In the latter part of June, I took a hurried trip to Sherwood with my friend John Ray Hardy, our most interesting captures being as follows:—by beating oaks, *Conopalpus Vigorsii* and var. *testaceus*, *Cryptocephalus querceti* and *Tiresias serra*. We also met with *Xylophilus pygmaeus* very sparingly under the same circumstances, together with which insect I was fortunate enough to take one specimen of *Scrapitia fuscula* and another of *Prionocyphon serricornis* (the latter has I believe been associated with ants' nests; its capture on oak may thus prove additionally interesting).

We saw but one *Cistela ceramboides*, which fell to my companion's lot, far away from the part of the forest where we captured it last year.

Under very rotten moist bark of a fallen oak we met with *Eryx atra* in all its stages, and have since reared a few of the pupæ.

Under birch bark, in fungoid growth, the following occurred to us; 2 specimens of *Plegoderus dissectus*, and *Aspidophorus orbiculatus*, and solitary examples (alas!) of *Lathridius testaceus* and *consimilis* (?) and of the rare *Sphindus dubius*.

The *Sternoxi* were conspicuous by their absence, the only capture beyond the most common species being a single example of *Elater cinnobarinus* (*lythropterus*, Wat. Cat.), which Hardy dug out of rotten birch.

Birch bark also yielded *Hypophlæus castaneus* in some numbers. I may here remark, for the edification of those who possess *Eros affinis*, that its habitat, so far as Sherwood is concerned, is, I am much afraid, destroyed; the greater part of the decaying wood, where it occurred to us in 1868, having been cleared away by the foresters.

In the first week of July we spent three or four days in the Burnt Woods near Market Drayton, Staffordshire, where we captured *Cryptocephalus punctiger*, *fulcratus* and *lineola* by beating birches, *C. 10-punctatus* and var. *bothnicus* on dwarf willow, *Saperda populnea* on poplar, and *Lina cænea* on alder.—J. KIDSON TAYLOR, 3, Shakespeare Terrace, Old Trafford, Manchester, August, 1870.

Occurrence of Pissodes notatus near Manchester.—A few weeks ago, I took on Chat-Moss one or two examples of *Pissodes notatus*; and, on a subsequent occasion,

with my friend Mr. Morley, captured several specimens of that insect by beating pine-trees. This species has not, I think, been as yet recorded from the Manchester district — WILLIAM BROADHURST, 23, Spring Vale Road, Pendleton, Manchester, 18th July, 1870.

Coleoptera at Rannoch in 1870.—I have captured the following *Coleoptera*, besides the general run of Rannoch species, during my stay there, from the 6th to 24th of June: one specimen of *Mycetophagus fulvicollis*, running on a fir log in the saw-mill yard at Dall, at which place I also took *Athöus undulatus* and *Elatér pomorum* (single specimens of each, and each being dragged along by large wood-ants), *Scolytus Ratzeburgii*, *Rhinomacer attelaboides*, *Xyloterus lineatus*, *Hyperaspis reppensis*, *Tachinus elongatulus*, *Pytho depressus*, *Otiorynchus maurus* (I always found this species on a heap of saw-dust, together with immature *Trichius fasciatus*), *Ips quadripustulata* and *Staphylinus lutebricola* (which occurred again at moss at the foot of Cross Craig). *Dictyopterus Aurora* and *Trichius fasciatus* were abundant, but *Asemum* was rare and generally imperfect.

At the mouth of the river at Dall, *Cryptohypnus maritimus* was to be seen pretty frequently, and sometimes caught, and *Coccinella quinquepunctata* was rare. In stumps, between Camachgouran and Cross Craig, the three Rannoch *Leiodes* were fairly abundant, *L. castanea* being the most so. I found one *Anaspis rufilabris* (?) in a stump here, and afterwards several, together with *Cetonia floricola*, on ash blossom. I took two *Anobium nigrinum* and one *Dircea leviigata*, by sweeping under fir-trees; on a decayed birch tree, at the foot of Cross Craig, one *Carida flexuosa*; in moss, *Tarus vaporariorum* and *Bradycellus collaris*, and in sheep-dung, *Autalia puncticollis*.

At Grayvel, *Anthophagus alpinus* was abundant, being found both by sweeping and in moss.

On the road through the Black Wood, *Carabus glabratus* sometimes appeared, and on one occasion *Lamia textor*. *Silpha nigrita* was not uncommon, and always brown.—EDWARD A. WATERHOUSE, Fountains Hall, Ripon, August 12th, 1870.

Coleoptera on the shores of Loch Leven.—At Loch Leven I was fortunate enough to capture *Silpha dispar* in dead perch and wings of rooks. Where the shore was sandy, *Bembidium pallidipenne* was not uncommon, together with *Georyssus pygmaeus* and *Grypilius equiseti*; this last common and in good condition. *Blethisa multipunctata* was also abundant, amongst wet grass.—ID.

Note on æconomy of Mecinus and Baridius.—I have bred *Mecinus collaris* from galls of *Plantago maritima*, which are very abundant here, though the beetle is rare, as 99 out of every 100 galls contain Hymenopterous parasites; and I have also bred *M. pyrastrer* from galls of *Plantago lanceolata*. *Baridius laticollis* is to be taken somewhat plentifully here, in roots of *Sisymbrium officinale*, from which I have reared it.—H. MONCREAFF, 9, Wish Street, Southsea, August, 1870.

Note on Platysamia Cecropia, Linn.—In "The American Entomologist" for February, 1870, is an article on this insect, where it is mentioned in a note that the late Mr. Walsh had at one time denied that silkworms and other moths employ a

fluid to moisten their cocoons, and loosen their texture to facilitate emergence. Though the matter is now to be regarded as open to no doubt whatever, some details of the process may be interesting. I confess that I was once inclined to doubt the fact, assuming that the moths that were said to do so had no mouth apparatus for the purpose; for it is precisely those moths that have no proboscis and hardly any oral appendages that soften their cocoons with a special fluid.

I have examined several specimens of *P. Cecropia* at the moment of emergence, having first taken the pupa out of its cocoon; as soon as the chrysalis case bursts, the head of the perfect insect appears—this is clothed in front with red hairs, bounded behind by the grey wool of the collar (prothorax). These red hairs are seen to be moist, and as soon as the vertex is all visible it becomes quite wet. If this fluid be removed, it is replenished to a total amount of more than one minim. What is most striking in examining the insect in this way is that, though the wool on the head is as wet as a sponge, the wool of the collar and prolegs which touches it remains perfectly dry. The fluid itself is colourless, faintly alkaline, and, when applied to the silk of the cocoon, renders it almost instantly soft, and easily teased out. The fluid appears not only to soften the gum that stiffens and binds together the silk, but to a certain extent to destroy or neutralise it, as the margin of the opening from which the moth has emerged remains soft and pliable, without any of its previous stiffness or harshness. The wetted surface of the head dries very rapidly after emergence. The fluid comes from an opening which must be the mouth. This is a narrow transverse slit, separated from the wool of the face by a narrow naked surface which I take to be the labrum, and prevented from reaching to the eyes on either side by two small projections which appear to represent the mandibles. Immediately below it are two rounded elevations which must be the maxillæ. This region is all free from wool, but is covered by the palpi which are attached immediately below, and which are clothed with hair, as is also a narrow plate just below them (the labium?); after which is the membrane articulating the head to the following segment. Each palpus appears to consist of only one joint articulated by a rather narrow neck, but it is difficult to assert whether it be the labial or maxillary palpus, though I incline to think it the former. In either case, I think it evident that the orifice from which the fluid proceeds is the mouth.

In a note on *Tipula flavolineata* in the Ent. M. Mag., I described how the intestinal canal is inflated with air on the emergence of the insect from the pupa state. This appears to be a very common occurrence during the ecdysis of insects, though I do not remember to have seen it noted. I have observed it in several *Lepidoptera*, and in the earwig at its several moults. The larva of *P. Cecropia*, when about to spin, discharges, with the last contents of the intestinal canal, from thirty to fifty minims of clear fluid, which soon becomes brown (especially if the larva have fed on apple); and various other *Bombyces* do the same: the larva, notwithstanding, does not diminish in bulk, but the intestinal tube is inflated with air; this is easily tested by scratching the tubercles of the larva, when a hollow sound results, hardly any sound being produced by so treating a feeding larva; and I have determined by dissection that the air is in the intestine.—T. ALGERNON CHAPMAN, Abergavenny, June, 1870.

Description of the larva of Acronycta myricæ.—To the kindness of Mr. George H. Kenrick, of Innerhadden, I am indebted for the opportunity of offering a description of the full grown larva of this species, which I have proved by breeding the moth, as far as I know, for the first time.

The larva, taken in Perth-shire, reached me 12th September, 1869; ate, apparently without preference, sweet-gale, sawallow, heath, or ling; spun itself up in a tough silken cocoon covered with moss, on the 15th; and the moth—a female—appeared on June 28th, 1870.

I may mention that a Moray-shire example of this larva, sent me for inspection about the same time as the above by Mr. Longstaff, showed a decided partiality for birch.

The Perth-shire larva I figured on September 12th, and at the same time noted the following particulars.

The larva is one inch and a half in length, moderately stout, the last three segments seen to taper a little to the anal extremity when looked at from above: the head rather flattened in front, widest at the sides just above the mouth, and scarcely less than the second segment, but the two lobes are rounded and well defined on the crown; the second segment is almost flat on the back, though all the other segments are remarkably rounded and plump, and the segmental divisions deeply cut.

The ground colour is a rather smoky deep olive-green; the head is black and shining, the lobes outlined with pale olive, the base of the papillæ lemon-yellow, the mouth olive-green; the second segment has a black shining plate on the back, divided in the centre by a thin line of yellowish olive; the third segment has an orange-red transverse central band extending to the sub-dorsal region, and dividing a broad, oval, dorsal, black, velvety mark, with an olive tubercle in front at each end; the fourth segment has a similar broad dorsal oval of black, bounded on either side by a large sub-dorsal lemon-yellow tubercle; on each segment, excepting the first two, there is a transverse black velvety broad band, somewhat saddle-shaped, and upon this, in the sub-dorsal region, from the fifth to the thirteenth segment inclusive, is a conspicuous lemon-yellow blotch, something of a triangular form, but with rounded angles; the lower side marking well the sub-dorsal region, and bearing on its hinder angle, sloping upwards, two large wart-like tubercles of the same colour, and almost close together; the spiracles are white, and are situated in the bottom part of the velvety black transverse bands, and a little above each, on the black band, is an olive tubercle; immediately beneath the spiracles is an inflated and rather punctured stripe of bright orange-red running along the side; below this come other olive tubercles, two on the lower side of each segment; the ventral surface is also of the olive ground colour; the pro-legs are of a darker, smoky-olive, the anterior legs black. All the tubercles are furnished with fascicles of hairs of a smoky-olive tint; those on the third segment are longer, more numerous than the others, and directed forwards to the crown of the head; some longer hairs also proceed irregularly from the twelfth segment, and point backwards.

The Moray-shire larva was much like the foregoing, save that it had black hairs mixed with the olive ones; its sub-dorsal blotches were less bright, though of a deeper tint of yellow; and there was more orange than red in the transverse band of the third segment, as well as in the sub-spiracular stripe, which last also was interrupted at the segmental divisions.—WM. BUCKLER, Emsworth, August, 1870.

Description of the transformations of Hepialus velleda.—It is with a feeling of great thankfulness to Mr. Joseph Steele, of Congleton, that I am able, through his untiring exertions, to bring to light the history of this species.

The eggs were scattered by the parent moth on the ground amongst the stems of fern (*Pteris aquilina*) during the month of June.

The egg is globular, and of a pale drab colour, which in a few hours changes to a deep blue-black. The young larva is hatched in three weeks; it is then of a drab colour, with pale, reddish-brown, horny head, plates and spots, and distinctly visible hairs.

It immediately begins burrowing into the earth by the sides of the fern stems, nibbling them in its progress downwards to the root or rhizome of the fern, from which its future sustenance is to be derived during two seasons.

By the end of the first twelve months of its existence, the larva has attained the average length of three-quarters of an inch, and is very slender and active, of an opaque yellowish- or greyish-white, with three transverse blackish translucent streaks on the back of each segment, and the blackish dorsal vessel visible through the skin.

It continues to feed till quite late in the autumn of its second year, when it becomes full-fed; having, meanwhile, committed very extensive ravages on the fern.

The rhizome, tough as it is, though juicy at the same time, is excavated and channelled out for about the length of ten inches, in some places nothing being left but the outer rind—in others, the galleries of the larva being scooped out tortuously along the outside.

During its second winter, the larva remains torpid at some depth; but, on the advent of spring, approaches near the surface of the earth.

It is now full grown, and, according to the sex, measures from $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in length—rather thick in proportion, the folds and segmental divisions being very deeply cut, and the jaws remarkably large and prominent.

In colour the head of the ♂ is reddish-brown, with a distinctly defined plate of the same colour on the second segment, while in the ♀ the head is of a deeper and purplish-red; the mouth (in both sexes) blackish, and the plate on the second segment of a pale brownish-orange, at each side blending gradually into the ground colour of the body, which is of a whitish cream tint; the third and fourth segments have pale brownish-orange plates on the back; viz., a large drop-shaped one in the middle extending from the back down either side, with a shuttle-shaped one before and another behind: a similarly coloured plate is on the anal tip.

The dorsal vessel is seen through the thoracic segments as a pulsating tortuous blackish streak; the tubercular spots on the back are orange, each on an eminence of the ground colour; those on the sides are small and dusky, and each is furnished with a highly sensitive brown hair. The spiracles are black, and rather large in size.

From near the end of April to the beginning or middle of May, according to the season, the larva proceeds to spin a slight cocoon of silk, covered with light earthy particles, amongst the loose vegetable soil, in which it remains a pupa for about a month.

The pupa of the ♂ is about three-quarters, and the ♀ seven-eighths of an inch long, of a uniform, reddish-brown colour, thick in proportion throughout; the tip of the abdomen is blunt and rounded, the head slightly beaked, the segments deeply cut;

a very prominent sharp ridge all round the twelfth segment is furnished with short hooks curved backwards, and two rather prominent ridges with similar hooks are on the back of the other abdominal segments; these hooks are gradually larger as they approach the hinder extremity, the tip of which is encircled with a few blunt spikes. Beneath the abdomen, occupying the precise situation of the former pro-legs of the larva, are pairs of short ridges finely hooked, playing still the part of legs in the movements of the pupa,—which, when feeling its final transformation approaching, bursts through its fragile cocoon, and travels upwards till its wing-cases are thrust out clear from surrounding objects, and the imago can emerge without incumbrance.

This last event takes place in the early part of June.—ID.

Occurrence of Pempelia obductella, F.R., a species new to Britain.—Several specimens of this species have been captured by Mr. Button, of Gravesend, this season, which are now in my possession. The species was kindly identified for me by my friend, Mr. Doubleday, who says “the larva feeds upon various species of mint, especially *Mentha arvensis*; it is dull green, with longitudinal black stripes.”—E. G. MEEK, 4, Old Ford Road, E., August 10th, 1870.

Capture of Argynnis Lathonia and Chærocampa Celerio near Faversham, in 1869.—While staying last month with my friend the Vicar of Selling, near Faversham, his youngest son, a boy of twelve, brought me a box to look over, containing a few insects collected by him during the summer of last year and the spring of this; at the same time telling me that he believed there was a ‘Queen of Spain’ among them. Knowing how often *Adippe* or *Aglais* is mistaken for the rarer species, I felt very sceptical; but, on opening the box, the first thing my eye fell upon was a veritable *Lathonia*, set to show the unmistakeable under-side. It was taken last summer by the road-side, between Selling and Chilham, and is in very fair condition. I speedily discovered a second rarity in the shape of a specimen of *C. Celerio*—badly damaged, unfortunately. This I found had been taken in the house at Woodlands, Selling, the previous autumn. What luck the boys have! there was hardly a specimen of the commoner fritillaries or hawk-moths in the box! Both of these prizes were generously presented to me by their captor, Master Herbert Beardsworth.—HUGH A. STOWELL, Breadsall Rectory, Derby, August 2nd, 1870.

Deilephila galii near Derby.—I captured a ♂ specimen of *D. galii* at honeysuckle in my garden, about 8.40 p.m., August 1st; and almost at the same moment my little friend Bertie Barton took a ♀ at verbenas on the other side of the house. We took two more at the verbenas, in the evening of August 6th.—ID.

Deilephila galii at Alphington.—On the 5th instant, about eight o'clock in the evening, I captured a very fine *Deilephila galii*, ♀, hovering over a white *Petunia* bed. Insects are now coming very plentifully to sugar. I had last night no less than 30 species of *Noctuæ*, 16 species of *Geometræ*, and many *Micros*, on the trees, &c., in my orchard and garden.—H. D'ORVILLE, Alphington, near Exeter, 11th August, 1870.

Deilephila galii at Leominster.—On the 7th of this month, I had the good fortune to take a splendid *D. galii* flying over a bed of *Petunia*. I have since seen another that was caught by Mr. Nield, of Clifton, a gentleman now staying in Leominster.—T. HUTCHINSON, Grantsfield, 15th August, 1870.

Deilephila galii in Herefordshire.—I had the pleasure of capturing at St. Weonards, near Ross, Herefordshire, on the evening of Wednesday, August 3rd, about 8.30 p.m., a fine ♀ example of *D. galii*. Perhaps this may be worth recording, as I am not aware that the insect has previously occurred in this county. I first observed it hovering over scarlet geranium.—F. BOND, Adelaide Road, N.W., August 8th, 1870.

Deilephila galii at Stalybridge.—A specimen of *D. galii* was taken in a garden near the Stalybridge Naturalists' Club Institute on the 3rd, and another in the same locality on the 5th, of the present month.—D. JOLLIFFE, Stalybridge, 18th August, 1870.

Deilephila galii in Suffolk.—A specimen of this insect was taken at Great Glenham on the 4th inst. by my young friend Mr. Capel Holden; I learn also from Mr. Harwood that the Rev. Hugh Stowell has taken four specimens in his garden at Breadsall, near Derby: so that there seems a prospect of this insect being more plentiful this year than it has been of late.—E. N. BLOOMFIELD, Guestling Rectory, August 20th, 1870.

Scoparia Zelleri and *Sesia ichneumoniformis* at Wolverton.—During the past three weeks I have captured upwards of 30 specimens of *Scoparia Zelleri* by beating old willow and hawthorn trees, but never getting more than three or four at each visit. On the 8th instant, I captured a fine pair of *Sesia ichneumoniformis* by sweeping the flowers of rushes.—W. THOMPSON, 183, Stantonbury, Wolverton, Bucks, 19th July, 1870.

Occurrence of *Scoparia basistrigalis* near York.—On the 6th July, I took four specimens of a *Scoparia*, which at the time I passed over as very fine *truncicolella*. Upon taken them off the setting boards, I saw at once they were something different to any species I had ever seen before. I at once sent a pair up to Dr. Knaggs, who very kindly named them for me. I have since taken three others, unfortunately in worn condition.—W. PREST, 2, St. Saviourgate, York.

Capture of *Lemiodes pulveralis*.—Your readers will be pleased to hear that this novelty has again turned up. I have in my possession seven specimens which were recently captured by Mr. Joseph Meek, at Folkestone.—T. COOKE, 513, New Oxford Street.

Anticlea sinuata in South Devon.—On July 15th, I captured two female specimens of *A. sinuata* at Buckfastleigh; and on the following evening, accompanied by my friends Messrs. G. F. Mathew and J. W. Peers, I again tried the same locality, when one example was taken by Mr. Peers. Last night I caught a specimen at Slapton Sands, near Dartmouth. It is more common here than I imagined.—S. H. COLES, H.M.S. Britannia, Dartmouth, July 21st, 1870.

Agrophila sulphuralis at Wandsworth.—On the 26th July, we took a specimen of *A. sulphuralis* at light, here; this is, we believe, a new locality for this local insect. On the 8th July, we took *Chesias obliquaria* here, also at light; it has

likewise occurred on Barnes Common : neither of these localities having, we think, been previously recorded.—E. & H. GREVILLE, Southfields, Wandsworth, August 1st, 1870.

[Some years since, Mr. Barrett took an example of *A. sulphuralis* at a gas-lamp, we believe at Dulwich, or in that neighbourhood.—Eds.]

Captures of Lepidoptera in 1870.—While travelling with my friend, Mr. Warrington, of the Isle of Man, this season, we succeeded in capturing the following species :—*Satyrus Semele*, bred from larvæ found on thrift, Isle of Man ; *Gluphisia crenata*, 3 specimens amongst aspen, Isle of Man ; *Dianthæcia capsophila*, Isle of Man and Howth ; *D. conspersa*, Isle of Man and Howth ; *D. compta*, Howth ; *D. casia*, Isle of Man ; *D. Barrettii*, Howth (one laid a few eggs which hatched about July 6th, I gave the young larvæ flowers and seeds of *Silene maritima*, but they refused them and died) ; *Polia nigrocincta*, larvæ on thrift, Isle of Man ; *Scoparia Zelleri*, several, North Devon ; *Penthina carbonaria*, in a rough field, North Devon ; *Opadia funebrana*, beaten out of an old hedge, North Devon ; *Dicrorampha flavidor-sana*, amongst wormwood, North Devon ; *Catoptria modestana*, in a wood, North Devon ; *Eupœcilia curristrigana*, one specimen, North Devon ; (*Ecophora Lambdella*, North Devon.—E. G. MEEK, 4, Old Ford Road, E., August 6th, 1870.

Leucania albipuncta at Folkestone.—Last night I captured a fine specimen of this species at sugar.—HOWARD VAUGHAN, Folkestone, 18th August, 1870.

Note on the Lepidoptera of Humphrey Head and other localities in Lancashire.—On the 8th July, I spent a few hours at this rough and rugged promontory, about three miles below Grange, which locality, if well worked, would no doubt produce many of the Isle of Man species. My main object was to obtain a supply of *Culeophora salinella*, but I got one only, although I had obtained 70 in the same locality two years ago. But the day was intensely hot, and the flies tormented me so greatly that I could scarcely look for a moth. In the marsh I met with *Gelechia instabilella*, *Crambus contaminellus*, *Elachista Bedellella*, and *C. salinella*. Among the *Sedum* on the rocks, I took *Glyphipteryx equitella*, and, flying round the sloe bushes, several of *Semasia janthinana*, a species I never before met with. I feel certain this place must be a good locality. Along the marsh-side there is an abundance of mullein, yellow-poppy, and *Atropa belladonna*, as large and strong as nut bushes. I should have liked to spend the evening there, but had made arrangements for a conveyance to take me back to Witherslack. The conveyance came, as did also a terrific thunderstorm, which soon filled my pockets with water, and also reduced all my pill boxes to pulp. However, I had, in a tin canister, larvæ of *Eupithecia venosata* and *Dianthæcia carpophaga*, and also *Depressaria* larvæ feeding on thistle, which no doubt are those of *subpropinquella*. The next morning was fair, and I went into a field opposite the "Derby Arms," and among the hollies beat out several specimens of *Eupithecia constrictata* and *pumilata*, *Crambus fulvellus* and *pinetellus*, *Lithosia complanula*, *Elachista sub-obscurella* and *Gleichenella*, and a *Sciaphila*, which is said to be *perterana*, but which is different to those I used to receive under this name. After breakfast I bent my way towards Whitbarrow, and in the lanes took *Eucosmia undulata*, *Eup. constrictata* and *tenuiata*, *Geometra papilionaria*, *Ligdia adustata*, *Acidalia inornata*, *Ephippiphora signata*, and *Olindia ulmana* ; also, among the juniper, *Argyresthia dilectella* in plenty ; and, by creeping on my hands and knees, two specimens of *Elachista triseriatella*. On the shingles, under Whitbarrow, I got *Rhodophaea marmorea*, but *Miana exposita* was out of the question, the wind carrying them away at a furious pace.—J. B. HODGKINSON, Preston, July, 1870.

Noctua baja paired with *Leucania pallens*.—Until last week, I do not think, at any sugar operations, I ever saw *Noctua* in cop.; but, on the evening of the 15th, I was rather startled in witnessing an unnatural alliance between *N. baja* and *L. pallens*—I fancy the male was *pallens*. Sugaring has been very productive here; on the occasion above mentioned, near the river Findhorn, I counted 766 moths on about 200 trees. Several moths new to the locality have turned up this season; *Heliothis marginata*, *Caradrina alsines*, *Hadena rectilinea* and *contigua*, for instance, all at sugar. The black and red variety of *Triphaena orbona* is just appearing.—GEO. NORMAN, Forres, 18th July, 1870.

Note on the food-plants of Acronycta menyanthidis.—As regards the food-plants of this insect, my experience goes to corroborate the statement in the "Entomologist," as I never found the larva on *Myrica gale*, while I have found from 30 to 40 on *Menyanthes trifoliata* and on *Calluna vulgaris*. In confinement I have found them eat hawthorn readily; in fact, I have found that almost any species, which in a wild state feeds on heather or willow, will, in confinement, feed on hawthorn, and that almost all heather feeders will also eat willow. On hawthorn, I have reared successfully *S. carpini*, *B. callunæ*, *A. menyanthidis*, &c.; and on willow, the above species, and *L. cæsiata*, *Anarta myrtilli*, *Cidaria populata*, &c.—J. TRAILL, Old Aberdeen, August, 1870.

Note on the larva of Miana arcuosa.—During the latter part of May, I had the good fortune to find the long-wanted larva of this species, feeding at the crown of the root of *Aira cæspitosa*; the pupa is to be found in the same position. The perfect insects appeared at intervals between June 26th and July 16th.—JAMES BATTY, 81, Wentworth Street, Sheffield, August 1st, 1870.

Note on Mimæoseptilus aridus.—Some few months ago, Dr. Jordan kindly sent me a plume moth which had been taken by Mr. Dorville in Devonshire. On learning it was Zeller's *aridus*, I compared it with a specimen I took on a rock face (one of the ugliest I ever had to climb) at the Isle of Man, in June, 1867, and which I had believed to be a new species, and I found them identical. On noticing the remark in Ent. Annual, 1870, p. 143, it struck me that anything tending to elucidate the point to which Professor Zeller has called our attention might be of interest. I may therefore mention that, so far as I could ascertain from the rugged nature of the ground where I captured my specimen, there was no *Knautia arvensis* growing anywhere near; and, as Professor Zeller says of his *serotinus* that it feeds on that plant, at first down the centre and afterwards on the leaves, it may be quite possible that *aridus* is a good species.—C. S. GREGSON, Rose Bank, Fletcher Grove, Liverpool.

Note on leaf-folding gall-midges.—As in the *Lepidoptera* we meet with gall-making, leaf-rolling, and leaf-folding *Tineina*, so we find amongst the *Diptera* a large genus, *Cecidomyia*, the members of which are adepts in the same crafts. In the present lines I will confine my attention to a few gall-midges which, in their larval state, fold leaves, and the œconomy of which wants further investigation.

Throughout the summer, I have for several years past noticed in this neighbourhood, yellowish larvæ of a *Cecidomyia* in the doubled-up and incrassated leaflets of *Rosa canina*. Each leaflet is neatly folded edge to edge, so that the upper-side of

the leaflet forms the inner wall of the cavity, whilst under the irritation of the suction of the larvæ from within and under the solar influence, the outer (*i. e.*, the under-side of the leaf) becomes red and bloated, forming a series of bosses between the lateral ribs. I have seen from 3 to 10 larvæ in one of these pod-shaped folds.

Bremi has figured and described an almost identical formation on the same rose found in Switzerland (Beitraege z. e. Monographie der Gallmuecken, 1847, p. 27, et tab. ii, fig. 31); but, as he mentions that the larvæ he found in it were pale green, I apprehend that my British larvæ will turn out to belong to a species other than his *Cecidomyia rosæ*, and which I do not believe has ever been described.

In June of the present year, near Godalming in Surrey, and also in this neighbourhood, I met with oak leaves, some lobes of which were neatly folded and laid down on the under-side, forming a snug hollow covering for two or three greenish-white small larvæ of a *Cecidomyia*. The folds were of a paler colour than the leaf itself, and therefore easily detected. An adult larva was a line in length, white, with green intestine, its first segment slender and beak-like, the breast bone well marked and pale yellow. In one fold, found here (12th June), I met with two of the minute, elongate, white, and semi-transparent eggs of this species, fixed to the surface by one end, and standing upright.

Similar folds, also caused by Cecidomyian larvæ, occur on *Onobrychis sativa*, and on various species of *Trifolium*; and, if the present notice should induce any observer to turn his energies in the direction of the hitherto neglected study of leaf-folding *Diptera*, I shall not have written it in vain.—ALBERT MÜLLER, South Norwood, S.E., 9th August, 1870.

Cecidomyia terminalis, Loew, pruning the top-shoots of *Salix fragilis*.—Last summer I recorded the action of *C. salicina* on the top-shoots of *Salix alba* (Ent. Mon. Mag., Vol. vi, p. 109). During last July I have had occasion to watch the operation of an allied species, *C. terminalis*, Loew, the eggs of which, to the number of 20 or 30, are laid in the tops of the most prosperous shoots of *C. fragilis*. Each shoot so provided remains stationary in growth, the top assuming a close and galled appearance, and sheltering within its bloated leaflets the numerous reddish-yellow larvæ, which have emerged from the said eggs. The larval state lasts about a fortnight: an equal period suffices for the pupal stage, which is passed under ground, and the perfect insects force their way out of the pupal integument in the usual way. Very soon after the larvæ have left the shoots, the tops rapidly wither away and turn brown; at the junction between the healthy part and the galled top, a series of minute woody cells covers the surface of the shoot, and gives it the appearance of a closed scar; in fact, it is the same process which causes the autumnal shedding of the healthy leaf and the fall of ripe fruit. The scars look as if cut with a sharp pruning knife; and I recognize, in the operation of this minute gall-midge, one of the potent agencies which check the undue growth of a tree, the easy and rapid propagation of which has almost become proverbial.—IN.

Obituary.

Professor Lacordaire.—Jean Théodore Lacordaire was born at Recey-sur-Ource (Côte d'Or), France, on the 1st February, 1801, and was educated in the Lyceum at Dijon, in which town he also appears to have studied for the legal profession. But his inclinations for Natural History caused him to travel in South America, that continent in which nature is most prodigal, and between 1825 and 1832 he made

four voyages, visiting and exploring Brazil, Buenos Ayres, Chili, French Guyana, &c., amassing vast stores of the natural productions of these countries, and publishing, on his return, an account of his expeditions. In 1835 he accepted the professorship of Zoology at the University of Liège, and afterwards also that of Comparative Anatomy; eventually he became rector. He died at Liège, on the 18th July last, in his 70th year, his end having been probably hastened by the death, early that month, of a favourite daughter. As an entomologist, and especially as a Coleopterist, Lacordaire had for many years occupied a very high pinnacle of fame. To specify and examine his publications would occupy more space than we can afford—we mention one work only, a work which will hand down his name to generations of entomologists yet unborn, as a masterpiece of research. We allude to his “*Genera des Coléoptères*,” forming part of the “*Nouvelles suites à Buffon*.” Commenced in 1854, he had already, at the time of his death, published eight complete volumes and the first part of the ninth vol. of this gigantic undertaking, the concluding part of that volume being in the press. But he was not to finish his labours—one more volume (that comprising the *Phytophaga*, his favourite group, which he monographed twenty-five years ago), and the edifice so admirably begun and continued by him would have been completed. Let us hope the materials for that volume may have been left in such a state that some editor worthy of his task may be able to put the finishing stroke to what must remain a monument of research. Lacordaire was essentially a student, and not a collector, of insects. Though, of necessity, his stores must have been rich, he used them for their legitimate purpose of furthering his investigations; and, when each part of his work was completed, his materials for that part were usually dispersed, so as to leave him untrammelled for the work to come: in some respects he relied more on the collections of others than upon his own, for he spared no means by which to obtain a personal examination of the generic types described by various workers, so as to satisfy himself of their value, and so as to be able to correct or amend their descriptions, a task we fear too often necessary. His was the master mind which was to put in order the chaos of scattered observations. He was Honorary Member of most of the European Entomological Societies.

Thomas Henry Allis.—On the 1st August, at York, at the age of 53 years, passed from amongst us T. H. Allis, whose name will be long remembered by British Entomologists, and whose noble-heartedness will long cause him to be lamented by a large circle of fellow-workers. Mr. Allis was educated at the Friends' School at York, and among his school-fellows were Benjamin and Nicholas Cooke, Edwin Birchall, and others not unknown as devoted students of entomology. The taste for Natural History exhibited in this circle of boys was no doubt fostered and encouraged by Mr. Allis's now venerable father, Thomas Allis, well-known as a palæontologist. In after life his avocations necessitated a constant removal from place to place, and in this way he was enabled to explore many favoured entomological localities, and to amass by his own exertions, and by continued communication with entomologists, a collection of British *Lepidoptera*, which for extent and beauty is almost unrivalled. With great satisfaction we learn that this collection is not likely to be dispersed; it is of additional importance, inasmuch as it contains a number of types from the cabinet of the celebrated A. H. Haworth. But, besides his collection of *Lepidoptera*, Mr. Allis also possessed a magnificent set of British *Falconidae*, the greater part of which were prepared by his friend Graham of York, a justly celebrated taxidermist. His name will go down to posterity in connection with *Exæcia Allisiella*, discovered by him some twenty years since, and which, until

recently, was of great rarity. Mr. Allis had been in failing health for several years, and when the writer of this notice met him at York, in August, 1866, he was pained to see the wreck illness had then made of a constitution naturally most robust. At times he visibly improved, but rapidly declined a few months since, and at last his sufferings were such that death was probably a happy release. He was long a member of the Entomological Societies of London and Stettin.

Alexander Henry Haliday.—In our last number we briefly announced the death of this celebrated entomologist, promising a more extended notice of his life. Mr. Haliday was born at Belfast, in 1807, and, after his preliminary education was completed, entered at the age of 15 years as a student at Trinity College, Dublin, where he remained 5 years, earning for himself much distinction, and obtaining his degree of M.A. Subsequently he studied for the legal profession, and was called to the bar, but we are uncertain whether he ever practised. Settling in the North of Ireland, he devoted himself enthusiastically to the pursuit of literature and Natural History, and the high respect in which his character was held, caused him to be elected High Sheriff of Antrim, in 1843. His earliest entomological publication was probably a local list of *Coleoptera* and *Diptera*, communicated to the "Zoological Journal" in 1828; but soon afterwards he appears to have devoted himself more especially to the latter order, then almost unstudied in this country, and to which he continued constantly to pay much attention, publishing many papers thereon which have received the highest encomiums from such well-known Dipterologists as Loew and Schiner. A considerable portion of the "*Insecta Britannica—Diptera*" (the whole of the family *Dolichopidæ* and most of the *Empidæ* and *Syrphidæ*) was furnished by him, and it is with mingled feelings of pleasure and regret that we find Loew, in a notice of this work, stating that "the excellent plates by Mr. Westwood, and the systematic arrangement, prepared for the most part by Mr. Haliday, give to this work a character not shared by others of Mr. Walker's publications." But not to his Dipterous labours alone did he owe his fame as an entomologist. His classification of the minute parasitic *Hymenoptera* belonging to the *Chalcididæ*, *Proctotrupidæ*, &c., &c., and his arrangement of the order *Thysanoptera*, show how thoroughly and exhaustively he investigated those most difficult groups of Insects. About 10 years since, Mr. Haliday's health became uncertain—severe dyspeptic attacks reacted upon his nervous system and occasioned periods of apathetic melancholy which he could not shake off, and which rendered all work impossible during their continuance, notwithstanding that his mental powers remained unimpaired. He then sought the more genial climate of Italy, and took up his residence with his relative, Signor Pisani, Villa Pisani, near Lucca. Here he devoted himself to collecting and studying Italian insects, and to amassing an entomological library, which eventually became most extensive; but his contributions to entomological literature have been few of late years. In 1868 he visited Sicily, in company with his friend Dr. Perceval Wright, and in the same year took a prominent part in establishing the Italian Entomological Society which promises to become most useful and flourishing. The fatigues of this Sicilian journey, and the insalubrity of the climate, seemed to tell severely upon him; and on the 12th of last July he died, at the age of 63, his friend Dr. Wright having been hastily summoned to his bedside, and arriving in time to receive his last requests; to this gentleman, his colleague in the editorship of the "Natural History Review," we are indebted for much of the information we have been enabled to give of his early life. We believe there is some hope that his collections, with the types contained therein, may eventually be deposited in the British Museum.

THE GENERA OF *HESPERIDÆ* IN THE COLLECTION OF THE
BRITISH MUSEUM.

BY ARTHUR G. BUTLER, F.L.S., &c.

(Continued from p. 58).

Genus *MYSCELUS*, *Hübner*.

Verz. bek. Schmett., p. 110 (1816).

Typical species, *M. nobilis*, Cramer.

M. nobilis, Cramer; *M. Santhilarius*, Latr.; *M. Assaricus*, Cramer.

Genus *ERYCIDES*, *Hübner*.

Verz. bek. Schmett., p. 110 (1816).

Differs from *Pyrrhopyga* in the slender abbreviated hook of the antennæ. *E. Palemon*, Cramer; *Cleanthes*, Latr.; *Telmela*, Hewits.; *Pyramus*, Cramer; *Thræsea*, Hewits.; *Plutia*, Hewits.; *Pygmalion*, Cramer; *Urania*, Hewits.; *Pialia*, Hewits.; *Papias*, Hewits.; *præcia*, Hewits.

The second, third, fourth and fifth of the above species appear to differ in neuration, and may have to be erected into a distinct genus.

Genus *CARYSTUS*, *Hübner*.

Verz. bek. Schmett., p. 114 (1816).

Typical species, *C. Jolus*, Cramer.

The members of this genus are generally placed in *Hesperia*: they are remarkable for the great length of their antennæ, which in other respects resemble those of *Pamphila*.

C. Jolus, Cramer; *Phorcus*, Cramer; *Bursa*, Hewits.; *Fischeri*, Latreille; *Claudianus*, Latr.; *Catargyra*, Felder; *Marcus*, Fabr.; *Precas*, Cramer; *Fantasos*, Cramer; *Philander*, Hopffer; *Artona*, Hewits.

Section B.—*Hesperia*, Swains. (nec Fabr.).

C. Irava, Moore; *Cerymica*, Hew.; *Laufella*, Hew.; *Cæsena*, Hew.; *Chiomara*, Hew.; *Sinon*, Cramer; *Sergestus*, Cramer; *Coridon*, Fabr.; *Cynisca*, Swains.; *Itea*, Swains.; *Celsus*, Fabr.; *Basochesii*, Latr.; *Certima*, Hew.; *Lucas*, Fabr.

Section C.—*Cobalus*, *Hübner*.

Verz. bek. Schmett., p. 114 (1816).

Typical species, *C. Virbius*, Cramer.

Hind-wings generally shorter than in typical *Carystus*, and never longitudinally streaked on the under-surface.

C. Virbius, Cram.; *Physcelia*, Hew.; *Lafrenayii*, Latr.; *triangularis*, Hübn.; *Calvina*, Hew.; *Attina*, Hew.; *Cæsina*, Hew.; *Elia*, Hew.

Genus *PROTEIDES*, *Hübner*.

Verz. bek. Schmett., p. 100 (1816).

Typical species, *P. Mercurius*, Fabr. (*Idas*, Cr.).

The species resemble those of the genera *Goniuris* and *Telegonus*, but differ in having the antennæ of *Pamphila* (typical).

P. Idas, Cram.; *Ægita*, Hew.; *Evadnes*, Cram.; *Epitus*, Cram.; *Orchamus*, Cram.; *Brino*, Cram.; *Ovinia*, Hew.; *Amyntas*, Fabr.; *Xanthoptes*, Hübn.; *Lutetia*, Hew.; *Propertius*, Fabr.; *Ambasa*, Moore; *Helops*, Drury; *Comus*, Cram.; *Erinnys*, Trimen.

Genus *PAMPHILA*, *Fabricius*.

Illiger's Mag., vi, p. 287 (1808).

Typical species, *P. Comma*, Linn.Section A.—*Calpodes* (part), Hübn.

P. Ethlius, Cram.; *Nero*, Fabr.; *Nyctelis*, Boisd.; *borbonica*, Boisd.; *Micipsa*, Trimen.

Section B.—*Talides*, Hübn.

Verz. bek. Schmett., p. 106 (1816).

Typical species, *T. Athenion*, Hübn.

P. Athenion, Hübn.; *Ætna*, Boisd.; *Vestris*, Boisd.; *Ares*, Feld.; ? *Balanos*, Boisd.; *Herminierii*, Göd.; *Accius*, Sm. Abb.; *Arpa*, Boisd.; *Aria*, Moore; *Niso*, Linn.; *Marchalii*, Guér.

Section C.—*Gegenes*, Hübner.

Verz. bek. Schmett., p. 107 (1816).

Typical species, *G. pygmæa*, Hübn. (= *Nostrodamus*, ♂, Fabr.).

P. Nostrodamus, Fabr.; *Mathias*, Fabr.; *Julianus*, Fabr.; *guttata*, Bremer.

Section D.—*Pamphila*, Fabr.

The antennæ vary in this section, especially in length.

P. Namagua, Boisd.; *Phocion*, Fabr.; *Taumas*, Fabr.; *pustula*, Hübn.; *Brettus*, Boisd.; *vibex*, Hübn.; *fasciolata*, Blanch.; *Phyleus*, Drury; *Augias*, Linn.; *Confucius*, Feld.; *Augiades*, Feld.; *Phineus*, Cram.; *Prusias*, Feld.; *venezuelæ*, Hew.; *Comma*, Linn.; *mesogramma*, Latr.; *Sylvanus*, Esper; *Baiva*, Boisd.; *Enys*, Boisd.; *campestris*, Boisd.; *Zabulon*, Boisd.; *Otho*, Sm. Abb.; *Vitellius*, Sm. Abb.; *Dara*, Kollar; *Sunias*, Feld.; *Maro*, Fabr.; *Mæsa*, Moore; *Epictetus*, Fabr.

Section E.—*Phlebodes*, Hübner.

Verz. bek. Schmett., p. 107 (1816).

Typical species, *P. pertinax*, Cramer.

P. Rona, Hew.; *Aletes*, Hübn.; *Almodæ*, Hew.; *Æpitus*, Hübn.;

cerdo, Boisd.; *Bacis*, Boisd.; *Philemon*, Fabr.; *Orchomenes*, Boisd.; *immaculata*, Hew.; *Remus*, Fabr.; ? *Corades*, Feld.; ? *Hilas*, Wllgr.; *Stolas*, Boisd.; *pygmæa*, Fabr.; *inconspicua*, Bertol.; *textor*, Hübn.

Genus APAUSTUS, *Hübner*.

Verz. bek. Schmett., p. 113 (1816).

Typical species, *A. Menes*, Cramer.

This is *Ancyloxypha* (part) of Felder, and is intermediate in structure between *Thymelicus* and *Pamphila* (Sect. *Phlebodes*); *A. Menes*, Cram.; *A. Saturnus*, Fabr.

We have a remarkable new genus allied to the above in which the males possess a large radiating tuft of hair at the base of the hind-wings; the two species in the Collection have not yet been determined.

Genus THYMELICUS, *Hübner*.

Verz. bek. Schmett., p. 113 (1816).

Typical species, *T. Actæon*, Esper.

This genus may at once be distinguished from *Pamphila* by the absence of a hook to the antennæ, and the peculiar formation of the palpi.

T. Numitor, Fabr.; *linea*, Denis; *Actæon*, Esper; *nanus*? H. Sch.

Genus PYRGUS, *Hübner*.

Verz. bek. Schmett., p. 109 (1816).

Typical species, *P. Syrictus*, Fabr.

P. lavateræ, Esper; *marrubii*, Ramb.; *altheæ*, Hübn.; *alceæ*, Esper; *Proto*, Esper; *orbifer*, Hübn.; *Sao*, Hübn.; *malvæ*, Linn.; *malvarum*, Esper; *Andromeda*, Wllgr.; *Nerva*, Fabr.; *sidæ*, Esper; *tessellum*, Hübn.; *cribrellum*, Kinderm.; *phlomidis*, Friv.; *Galba*, Fabr.; *vindex*, Cram.; *Sataspes*, Trimen; *Spio*, Linn.; *maculatus*, Brem.; *Elma*, Trim.; *Dionus*, Hpffr.; *Mohozutza*, Wllgr.; *centaureæ*, Ramb.; *Syrictus*, Fabr.; *Domicella*, Erichs.; *Asychis*, Latr.; *ruralis*, Boisd.; *naso*, Fabr.

Genus LEUCOCHITONEA, *Wllgr.*

Kongl. Svenska Vetensk. Akad. Handl., p. 52 (1860).

Typical species, *L. Levubu*, Wallengren.

L. Arsalte, Linn.; *ericetorum*, Boisd.; *Laginia*, Hew.

Genus BRONTIADES, *Hübner*.

Verz. bek. Schmett., p. 113 (1816).

Typical species, *B. Procas*, Cram.

The wings proportionably longer, the eyes smaller, the head projecting farther in front of the wings, and the antennæ straighter, than in the preceding genus.

B. Procas, Cram.

Genus ANCISTROCAMPTA, Felder.

Wien. Ent. Monatschr., 6, p. 183 (1862).

Typical species, *A. Syllius*, Felder=*Hiarbus*, Cramer.

A. Hiarbus, Cram.

Form of body as in *Astictopterus*, Feld., antennæ of *Brontiades*.

Genus ASTICTOPTERUS, Felder.

Wien. Ent. Monatschr., 4, p. 401 (1860).

Typical species, *A. Jama*, Felder.

A. Jama, Feld.; *Sindu*, Feld.; *Lepeletierii*, Gödard; *inornatus*, Trim.; *Diocles*, Moore.

PLASTINGIA, *new genus*.

Allied to the preceding and to *Pamphila* (typical section), with the form and build of the latter; palpi with last joint prominent, antennæ much elongated, and terminating in a gradually curved whip-like hook. Typical species, *P. flavescens*, Felder.

The species in the British Museum are—*P. flavescens*, Felder; *tessellata*, Hew.; *callineura*, Felder; *extrusa*, Felder.

Genus CERATRICHIA, Butler.

Fabr. Cat. Diurn. Lepid., p. 274 (1869).

Typical species, *C. notha*, Fabr.

C. notha, Fabr.; *C. Phocion*, Fabr.

We have a third species of this genus in the Collection, but without a name.

Genus PLESIONEURA, Felder.

Wien. Ent. Monatschr., 6, p. 29 (1861).

Typical species, *P. curvifascia*, Felder.

P. Feisthamelii, Boisd.; *curvifascia*, Feld.; *Folus*, Cram.; *Eligius*, Cram.; *Putra*, Moore; *Chamunda*, Moore; *Ambareesa*, Moore; *Pulomaya*, Moore; *maculosa*, Feld.; *leucocera*, Koll.; *Galenus*, Fabr.; *Mokeesii*, Wllgr.; *Dan*, Fabr.; *Fatih*, Koll.

Genus NETROCORYNE, Felder.

Reise der Novara, 3, p. 507 (1867).

Typical species, *N. Repanda*, Felder.

N. Repanda, Felder.

A second un-named species in the British Museum from Ceylon nearly resembles *Plesioneura Fatih* in form and coloration, but not in its antennæ.

Genus *TRAPEZITES*, *Hübner*.

Verz. bek. Schmett., p. 112, n. 1207 (1816).

Typical species, *T. Symmomus*, Hübner.

T. Symmomus, Hübner; *Phigalia*, Hew.; *Jacchus*, Fabr. (*Eliena*, Hew.); *Petalia*, Hew.

Genus *TELESTO*, *Boisduval*.

Voy. de l'Astrolabe, p. 164 (1832).

Typical species, *T. Dirpha*, Boisd.

T. Gremius, Fabr.; *Perronii*, Latr. (*Doclea*, Hew., and *Kochii*, Feld.); *Dirphia*, Hew.; *picta*, Leach; *ornata*, Leach; *Ogygia*, Hew.; *Halyzia*, Hew.

The above genus has much in common with *Pamphila*, but may be at once distinguished by its antennæ, which more nearly resemble those of *Cyclopides*.

Genus *CYCLOPIDES*, *Hübner*.

Verz. bek. Schmett., p. 111, n. 1202 (1816).

Typical species, *C. Steropes*, Denis & Schiff.

C. Steropes, Den.; *Sylvius*, Hüb.; *Paniscus*, Linn.; *Malgacha*, Boisd.; *Metis*, Drury.

Genus *EUMESIA*, *Felder*.

Reise der Novara, 3, p. 504 (1867).

Typical species, *E. semiargentea*, Felder.

E. semiargentea, Feld.

I do not see that this genus differs much from *Cyclopides* or *Carterocephalus*: it certainly does not link the *Satyrinæ* and *Hesperidæ*.

Genus *CARTEROCEPHALUS*, *Felder*.

Verh. zool.-botan. Gellesch. Wien, p. 494 (1862).

Typical species, *C. exornatus*, Felder.

C. dimidiatus, Feld.; *Cypselus*, Feld.; *Agathocles*, Feld.; *Epiphanus*, Feld.

PARDALEODES, *new genus*.

Allied to *Cyclopides* and *Pamphila*, from the former of which it differs in its much more elongated and suddenly hooked antennæ, and shorter

and less hairy palpi; from the latter in the broader discoidal cell of front-wings, the first sub-costal branch emitted nearly in a straight line with the origin of the first median, all the branches of the sub-costal wider apart: the lower disco-cellular of front-wings shorter; it differs from both genera in the greater distinction between its sexes, and most nearly approaches the *Mars* group of the typical section of *Pamphila*.

Typical species *P. Edipus*, Cramer.

P. Edipus, Cram.; *Laronia*, Hew.

We have two other species un-named in the Collection. All the species are from West Africa.

Genus TARACTROCERA, *Butler*.

Fabr. Cat. Diurn. Lepid., p. 279 (1869).

Typical species, *T. Mævius*, Fabr.

T. Mævius, Fabr.; *Sagara*, Moore; *Donna*, Moore; *Coras*, Cram.; *flavovittata*, Latr.; *Papyria*, Boisd.; *Ceramas*, Hew.

The species of *Taractrocera* may be at once detected by the form of the antenna, which resembles that of *Argynnis*; the palpi are similar to those of *Apaustus* and *Thymelicus*.

Genus PYTHONIDES, *Hübner*.

Verz. bek. Schmett., p. 110 (1816).

Typical species, *P. Jovianus*, Cramer.

P. Tryxus, Cram.; *Sallei*, Feld.; *Oreus*, Fabr.; *Cronion*, Feld.; *festivus*, Erichs.; *Locus*, Hewits.; *Lerina*, Hew.; *pseudojovianus*, Westw.; *Jovianus*, Fabr.; *Lancea*, Hew.; *Limæa*, Hew.

Sub-Genus PARAMIMUS, *Hübner*.

Verz. bek. Schmett., p. 115 (1816).

Typical species, *P. Scurra*, Hübner.

P. Scurra, Hübn.; *P. stigma*, Feld.; *P. Hemes*, Cram.; *P. Lucaria*, Hew.

Genus THANAOS, *Boisd.*

Icon. Léop. Am. Sept., p. 240 (1832).

Typical species, *T. juvenalis*, Fabr.

T. Tages, Linn.; *Cervantes*, De Grasl.; *quercus*, Boisd.; *rusticanus*, Butl.; *juvenalis*, Fabr.; *tristis*, Boisd.; *clericus*, Fabr.; *Catallus*, Fabr.; *sericeus*, Freyer; *Kobela*, Trim.; *Westermannii*, Latr.; *Daurus*, Cram.; *Pato*, Trim.

The genus *Nisoniades* cannot stand, as its type is an *Achlyodes*.

Genus *ACHLYODES*, *Hübner*.

Verz. bek. Schmett., p. 107 (1816).

Typical species, *A. Busiris*, Cramer.

A. nigrina, Boisd.; *obscura*, Hüb.; *Mithridates*, Fabr.; *pa-piniana*, Poey; *Thraso*, Hüb.; *Sebaldus*, Fabr.; *mexicana*, Feld.; *Melander*, Cram.; *Asychis*, Cram.; *Thrasibulus*, Fabr.; *sanguinalis*, Hew.; *Velasquez?* Lucas; *chlorocephala*, Latr.; *Satyrina*, Feld.; *Nyctineme*, Boisd.; *Herennius*, Cram.; *Bromius*, Stoll.; *Flyas*, Cramer.

Genus *ANTIGONUS*, *Hübner*.

Verz. bek. Schmett., p. 108 (1816).

Typical species, *A. Ustus*, Hübn. (*Nearchus*, Latr.).

A. Nearchus, Latr.; *erosus*, Hübn.; *Syrichthus*, Feld.; *Helias*, Feld.; *angulatus*, Feld.; *Phagesia*, Hew.

The above genus is chiefly distinguished from *Achlyodes* by the peculiar form of the wings: it is adopted by Dr. Herrich-Schäffer, although he rejects the far more distinct genus *Helias* upon the supposition that Hübner may not have figured the proper insect as *phalænoides* (the type of the Fabrician genus), but since the latter is a common species and presents the character of the long palpi, pointed out by Fabricius, it is highly probable that the insect figured by Hübner is the species intended by Fabricius: Felder's *Antigonis* (*Nymphalinæ*) is too near the above, and should be changed.

Genus *HELIAS*, *Fabricius*.

Syst. Gloss. in Ill. Mag. 6, p. 287 (1807).

Typical species, *H. phalænoides*, Hübn.

H. phalænoides, Hübn.; *palpalis?* Latr.; *albiplaga*, Feld.; *hæmatospila*, Feld.; *noctua*, Feld.; *Lacæna*, Hew.

The genus *Helias* has the general characters of *Antigonis*, but differs in its long palpi: some of the species (♂s of *noctua* group) have the hind-wings deeply dentated and scalloped.

Genus *CAPRONA*, *Wallengren*.

Kongl. Svenska Vetensk. Akad. Handl., p. 51 (1860).

Typical species, *C. pillaana*, Wlgr.*C. Canopus*, Trim.

But for the antennæ, which somewhat remind one of those of *Pyrrhopyga* or *Telesto*, this genus might have sunk into a section of the preceding with *A. Lacæna*, the form of wings and general character of the markings being very similar to that species.

Genus TAGIADES, Hübner.

Verz. bek. Schmett., p. 108 (1816).

Typical species, *T. Japetus*, Cramer.

T. atticus, Fabr.; *Gana*, Moore; *Japetus*, Cram.; *Ravi*, Moore; *Helferi*, Feld.; *Menaka*, Moore; *Adrastus*, Cram.; *Flesus*, Fabr.; *Sinica*, Feld.; *Celebica*, Feld.; *Sambara*, Moore; *Gopala*, Moore; *Pralaya*, Moore; *Prodicus*, Stoll.; *Dasahara*, Moore.

With the above genus I conclude the genera in the British Museum. Concerning genera not in the Collection, I should be unwilling to express any decided opinion; but I think one or two figured genera look rather close to others previously described, as, for instance, *Oxyntera* to *Pyrrhopyga*, *Darpa* to *Antigonus*, *Capila* and *Pisola* to *Hesperia*, Fabr. I cannot imagine what induced the Felders to redescribe their genus *Plesioneura*, or to place a number of *Pythonides* in *Leucochitonca*; but Dr. Herrich-Schäffler has already said all that was necessary (and perhaps rather more) concerning these inadvertencies, and therefore there is the less reason why I should say anything further respecting them.

My genus *Udranomia* would, perhaps, be more correctly rendered *Hydranomia*, from the greek 'udrainō (I sprinkle with water); the typical species being sprinkled with small glassy specks. I do not think this will be too near to *Hydronomus* or *Hydræna*.

British Museum, July, 1870.

DESCRIPTION (WITH NOTES ON VARIATION) OF THE LARVA OF
DEILEPHILA LIVORNICA.

BY REV. J. HELLINS, M.A.

At page 61 of this Volume, I announced the capture, near Exeter, of a supposed larva of *Deilephila galii* on July 11th. The said larva soon spun up, and resulted, on August 18th, in *Deilephila livornica*, ♀. For once, therefore, I was agreeably disappointed in breeding something better than I expected; and this, so far as it goes, is satisfactory. It is less satisfactory to have to acknowledge that I made a mistake. My excuse is this: I did not name my larva without thought; my first impulse was to call it *livornica*, but the descriptions I consulted under that name did not suit; the points laid down in them as distinctive characters I could not find; and driven, as it appeared, from my half-formed hope, I was obliged to persuade myself that my prize was *galii*, a species of which I had once seen two larvæ, more than ten years ago; so, setting aside the objection arising from the time of year, or rather attributing its early appearance to the unusual heat, I penned and sent off my announcement to the Editors.

I now offer a description of my larva, made with Mr. Buckler's good help; and shall then add notes communicated to me of other larvæ found in South Devon and Cornwall.

The length of the larva, when stretched out, is about $3\frac{1}{2}$ inches; the head is the smallest segment, the body tapering towards it from the 5th segment; the anal prolegs broad and square, *the horn slightly curved, blunt at the tip*, and rough; the skin rather shining, but on the hinder half of each segment showing seven folds, well defined at the sides, and not so distinct on the back, where the skin seems tighter. The ground colour of the back and sides, as far as the spiracles, is an intensely dark green; the head black, but with a streak across the mouth, as well as the base of the papillæ, lemon-yellow; the plate on the second segment black; commencing on the third segment, and continued to the horn, an ochreous-yellow dorsal stripe, suffused with rose-pink, and bordered for some little width on each side by the plain ground colour; a sort of transverse band, also of the ground colour, placed on the front of each segment, and extending from the dorsal line to below the sub-dorsal; the rest of the side irrorated with small greenish-yellow spots, becoming more whitish near the spiracles; on the lower ends of the above-mentioned bands on segments four to twelve, and just in the region of the *well-defined, greenish-yellow, freckled, sub-dorsal line* (in fact, strung on it like beads on a string), a row of nine large roundish lemon-yellow spots tinged in the upper part with pink; and made all the more conspicuous from being delicately bordered with black, with two largish spots of black also on their upper border; on segment three, no spot, but only the sub-dorsal line; the spiracles ochreous-yellow, tinged with pink; just below them, an inflated and puckered stripe—yellow on the second segment, but whitish on all the rest, and interrupted just behind the middle of each segment by a large round spot of pink, slightly tinged with olive; the belly also pinkish; the true legs black; the ventral prolegs pinkish-white, tipped in front with a spot of black; the anal prolegs black; a pink edge at side of anal flap. I have called the sub-dorsal spots roundish, but in reality the shape is somewhat that of a dumpy pear, with the short stem pointing forwards and upwards; whilst the last spot in the row, that on segment twelve, may be described as of an elongated pear-shape, with the point directed backwards and upwards towards the horn.

Unfortunately, I did not examine the pupa with a view to description, but I saw that it was long, of a light brown colour, with the last two segments darker brown, the anal spike strong and sharply pointed,

but with no other projection to break the outline. It was placed on the surface of the earth, and the cocoon was but slight, being formed of a few bits of earth and withered fuchsia flowers, just tacked together with a few silken threads, and many interstices being left through which the pupa could be seen.

I shall next copy the notes, which, together with a figure, were kindly furnished me by Mr. W. C. Marshall, of a larva taken by Mr. L. Cumming, near the Lizard, Cornwall.

The head and second segment, and the anal prolegs all deep pink; the dorsal line yellow; the horn red and rough; the ground colour dark green, freckled with yellow, save in the transverse bands on the front of each segment; the sub-dorsal line yellow, but without the row of roundish spots; the belly yellowish. This seems the palest specimen I have heard of. Nearest to it, and in fact intermediate between it and my Exeter larva, comes one captured near Plymouth, and described and figured by Mr. G. C. Bignell: the head and second segment dull pink; the dorsal line yellow; the ground colour blackish, much freckled with yellow; the sub-dorsal line yellow; the sub-dorsal row of spots yellow, with pink centres; the anal prolegs dull pink; the belly whitish-yellow; the horn red, tipped with black, and rough.

But another larva, described to me by Mr. J. Gatecombe, was much darker, and must have come near to Fuessly's description quoted in Stainton's Manual; it had the head and second segment black, an intensely black stripe all down the back, the transverse bands black, and enclosing, at their extremities, semi-lunar spots of yellowish-white on the sub-dorsal line; the pinkish suffusion of the round spots of other specimens being in this case replaced with black, and so the usual outline of the spots was altered; the rest of the back and sides blackish, irrorated with greenish-drab; the belly also very dark; the horn dark purplish.

Now, if it be lawful, as I believe it is, to add to these notes of four larvæ taken in Devon and Cornwall this summer, a few words from Boisduval's descriptions of *Deilephila lineata* (his *lineata* being the *livornica* of Hübner and Esper, and so of our lists), I think we shall come to the conclusion that he is quite right when he speaks of it as "*cette belle chenille, qui varie beaucoup*;" and that after granting it the usual form and outline of a *Deilephila* larva, the really permanent distinctive mark is the sub-dorsal pale line, generally bearing on it the row of pale spots.

Boisduval then first figures a specimen with deep red head, second segment, dorsal line, horn, and anal prolegs: he calls the ground

colour "*noirâtre ou d'un brun roussâtre*;" he makes the transverse bands black; the sub-dorsal line and row of spots pale yellow; he gives the yellowish irroration, and makes the belly pinkish, and the horn slightly curved. Some way further on he figures, without description, a variety all over palish green; with lilac dorsal stripe, sub-dorsal row of whitish spots, suffused with pink, and placed on a whitish line; the sides irrorated with white spots; a pinkish sub-spiracular line, and a brown *straight* horn; but I fancy this figure was taken from an inflated skin, which would somewhat account for the unusually pale colour, and for the shape of the horn.

He also calls the larva "*polyphage*," as it indeed appears to be; I have heard of six specimens taken on a vine; Mr. Cumming's larva was found on dock; Mr. Bignell's was figured on knot-grass; mine ate fuchsia greedily, although the rustic who brought it to me in his neckerchief, assured me he found it among mangolds, and that it ate grass after he had carefully wrapped it up.

My note grows lengthy, but—believing that this will hereafter be known as the "*livornica* year"—I shall add the information given me by Mr. T. Terry (who, from the height of good luck in getting twelve larvæ from eggs laid by captured moths, fell into the depths of misfortune through poisoning all his brood with greenhouse vine leaves), and shall then conclude with a guess.

The eggs were light green, glued to the flowers of red valerian, which had been put in for the sustenance of the moths; the larvæ were hatched in about three weeks; their colour at first dirty white, without any spots, but with the head and horn black; at the end of their second week they began to assume markings; and, when they died, the longest was about an inch and half in length; the head, back, horn, belly, and legs were all intensely black; but the segmental folds showed paler, so as to give the appearance of alternate lighter and darker bands; the sub-dorsal line was red, as well as the sub-spiracular; the sides were dotted with yellow, and, as far as I can gather, the sub-dorsal spots seem to have made their appearance, and to have been red: apparently, these larvæ, had they lived to put on their last coat, would have been like the dark variety described by Mr. Gatecombe.

My guess is this: the perfect insect hibernates; it pairs, and lays its eggs in May or June; the larvæ hatch and feed up in June and July; the pupa-stage lasts about four weeks, when the moth comes forth to remain on the wing for a longer or shorter time previous to hibernation.

ON THE HABITS OF *PLATYPUS CYLINDRUS*, FAB.

BY T. ALGERNON CHAPMAN, M.D.

This beetle has been well described by Ratzeburg in his "Forst-insecten," and the larva is well described and figured by Perris; but neither of these authors gives much detail as to its habits, or, indeed, appears to have met with it in sufficient abundance to make many observations with regard to those habits.

Platypus cylindrus burrows into the solid wood, and, in consequence, is rather difficult to observe; the gnarled texture of a solid and by no means rotten oak stump being a most unpromising material to slice up in order to expose the burrows of the beetle. These burrows, in which both perfect insects and larvæ are found, have always an extremity open on the side of the stump. They are of uniform diameter throughout, viz., that of the full-grown larva and perfect beetle,—presenting no narrow burrows of young larvæ, as observation of most of the other *Xylophaga* would have led us to expect. And the inhabitants are not confined each to its own branch of the burrow, but the larvæ, to the number of from sixty to a hundred, together with the perfect beetles, their parents, run actively backwards and forwards in the burrows, and from one branch to another, getting out of each others way, backing into a branch to let another larva pass, just as a train is shunted into a siding. The following observations leave untouched several points in the history of *Platypus* which I should have liked to have cleared up, for which my excuse must be the difficulty of tracing the proceedings of the insects in the centre of the solid masses of oak they inhabit.

The usual habitat of *Platypus* is in oak stumps, but I have met with it also in beech. After a tree has been cut down, although the stump may throw up no shoots, it yet maintains for a time a sort of life, portions of bark for instance even two or three years afterwards looking much like that from a living tree. It is in such stumps that *Platypus* makes its burrows, and in those parts of them which, though to all appearances sound, have, one or more years after the fall of the tree, entered into the first stage of decay. What appears to be essential is the presence in the wood of a certain fungus, which probably lives in the fermenting and decomposing sap. I shall recur to this fungus when mentioning my observations on the young larva.

After a brood, or rather colony, has been reared in one part of a stump, another part which has meantime reached the proper condition is often attacked in the following year, so that it may happen that one part of a stump is quite rotten, whilst another is still tenanted by the beetle; but, wherever there are larvæ still feeding, the wood continues apparently sound.

There is another point which seems important, that is, the position of the stump. I have rarely found them in stumps on level ground, but nearly always in those on a steep slope. This probably arises from the earth above yielding a supply of moisture to the latter, whilst there is sufficient drainage below, and the wood is thus kept of a proper dampness. It must moreover arise to some extent from stumps on a slope presenting on the lower side an abundant surface, from which the beetles can make their attack; as they always bore inwards horizontally or slightly upwards, they thus command nearly the whole stump; whereas with a stump whose surface is level with the ground they can command very little of it.

During July and August the beetles emerges from the pupal state, the greater number during the last week in July, and at this period they commence their burrows; on July 15th I found such a burrow nearly three inches in depth. Occasionally an odd burrow is to be found, but usually the burrows are in colonies, and as many as fifty entrances may be found on the side of a stump, scattered over a surface twelve to fifteen inches wide and four or five high. The burrows are often begun on a smooth surface, but usually any little hollow or irregularity is taken advantage of, in commencing the burrow. I have a fine specimen, in which a strip of bark had been removed from the side of a large root, and the margin was cicatrising; in the angle all round this surface the entrances of burrows were closely placed, only one or two others being present at other points. The burrow from its mouth on the surface of the stump is a perfectly clean-cut cylinder.

Each burrow is tenanted from its commencement by a pair of beetles. Both beetles and full-grown larvæ feed on the wood, and when they are doing so, they eject little rounded nodules of frass, which have obviously passed through their alimentary canals. In the case of *Hylesinus fraxini*, and several other *Xylophaga*, I have satisfied myself that the parent beetles eat the removed material when they are forming their burrows of oviposition. With *Platypus*, however, this is not the case. In forming its burrows it does not eat the removed material, and, instead of the end of the burrow being rounded, it is at this period flat, *i.e.*, a plane at right angles to the axis of the burrow; and the ejected frass is not found in the little rounded pellets afterwards observed, nor in little lenticular bitten pieces, which appears the only other alternative, but in very fine splinters, most of them of a length equal to the diameter of the burrow. I may remark here that this burrow is always made across the fibres of the wood. The ejected frass, which forms a little heap outside the burrow, looks very different from that afterwards thrown out. Both sometimes accumulate to such an

extent as to bury the mouth of the burrow ; and, if the frass should be matted together by being wetted, the burrow often extends through it to the surface, occasionally forming a tubular addition of an inch or more in length, but this is a purely accidental occurrence.

I had the good fortune on one occasion to observe the process of separating this splintery variety of frass. I had so split a piece of wood as to expose a burrow within a few lines of its inner extremity. In this burrow was a beetle that could not in these circumstances completely hide itself. It continued, however, to work, and kept ejecting frass of this description. It moved very gently, as beetles do when moving their jaws, with the exception that every ten seconds it came out with a sudden jerk for a distance equal to one-third its own length ; so one could not help concluding that something it was pulling at had suddenly given way. I think that I am justified in inferring from this that these little splinters are bitten through at one or both ends, and then laid hold of and separated by a pull ending in the sudden jerk resulting from the bit of wood becoming loose.

I may mention that, when perfect, the beetle has very long slender tarsi, and that it is a matter of notoriety that these are usually broken. This is almost invariably the case with those beetles that have formed a burrow ; they often possess no tarsi whatever, except about half of the basal joints. It occurred to me that this sudden jerk sufficient explained the want of tarsi. Such a beetle, when extracted from his burrow, is utterly helpless, yet in this state he manages to run backwards and forwards in his burrow with great facility, and to live there in apparent health for many months ; moreover, as he never naturally leaves the burrow again, the loss must be of but little consequence. The newly-emerged beetles, that is, those possessing their long and delicate tarsi, do not seem comfortable on a smooth surface, but over a rough piece of bark they can run with great agility. I suspect, though on this point I have made no observations, that they find them very useful in sustaining the body in a proper position at right angles to the surface of the wood or bark in commencing their burrows. As to the mechanism of this jerk by which the splinters are separated, the anterior femora are extremely broad (or, rather, deep), from which circumstance indeed the genus is named ; and they are not by any means narrowed in the other diameter, but are extremely strong limbs ; the anterior tibiæ are, externally, diagonally ridged, but in such a way that, though the ridges are diagonal to the tibia, they are, when it is in its usual position, transverse to the burrow, and are sharpest forwards, so that they must give a very firm hold of the wall of the burrow when the beetle uses his strong femoral muscles to push himself backwards.

Although the jaws are, as usual, directed forwards, their sharp, cutting edges are quite in advance of the beetle, when the head is in its normal position, and are thus beautifully adapted for cutting the wood round the side of the burrow at its extremity, and, by a change in the position of the head, may serve to seize the fibre of wood to pull it off.

When the burrow is some six or seven inches in length, a rounded extremity is made to it, in which the female deposits her eggs, and it is for the time abandoned, the parent beetles commencing the construction of a branch. Eggs are laid as early as the beginning of August, and as late as the end of October, and usually, I think, in recently constructed branches of the burrow. I have found single eggs, and groups of two or three, at various points in such a branch, but the proper place seems to be at the rounded extremity, as here I have found groups of nine, twelve, and even of twenty-three eggs. These are simply little masses or heaps of eggs lying loose close to the end of the burrow. In such burrows are also found the young larvæ; but before the larvæ are hatched there appears on the wall of the burrow a damp, greyish-white, felty-looking coating, sometimes narrowing the gallery to half its width; and it is the undisturbed appearance of this coating which leads me to believe such a branch of the gallery is for a time abandoned by the parent beetles. I have found such a gallery in November un-intruded upon, when other branches of the burrow contained half-grown larvæ; whether these kept out of it by their own instincts or were marshalled from it by their parents I cannot say. But of this there can be no doubt: during the autumn months several batches of eggs are successively laid in different branches of one system of burrows by the same parents, of which the first are often full-grown before the last are laid, and the burrows containing eggs and young larvæ are respected by all the other inhabitants of the burrow, notwithstanding the fact that the full-grown larvæ are very fond of this felty coating (which I have seen them scrape off the walls with their jaws with apparent gusto), and that there is no physical impediment in their way.

The greyish felt lining of the burrows consists of a mass of tubes belonging to the fungus to which I have already alluded. The tubes consist of a very thick wall filled with small rounded bodies (spores?), and similar structures may be found in the surrounding wood, which has a sweet heavy smell similar to that of freshly cut oak wood, but much more strong. The tubes that exist in the wood are no doubt properly to be regarded as mycelium; whether those in the burrows are so or an abnormal form of fructification I cannot say. I believe that this mycelium is not that of any of the larger fungi, but is probably that of some mould, or some species allied to the yeast plant.

(To be concluded in our next.)

Occurrence on the south coast of Baridius scolopaceus, Germ., a species new to Britain.—In June last, I captured a single specimen of *Baridius scolopaceus*, Germ., by promiscuous sweeping on the south coast.* *B. scolopaceus* is about the average size of our other British *Baridii*, but utterly unlike any of them, being densely clothed with brown scales, variegated above with white, the abdomen being sparingly scaled beneath with white. It seems to vary a good deal in the amount of scales,—M. Perris, indeed, having founded a new species at its expense, under the name of *vestitus*, with which my insect will probably best agree. M. Perris records his specimens as being taken among *Salicornia* and *Glaux*, at the foot of the plant, and it seems to be a not uncommon European species. I do not believe that either plant was to be found within half-a-mile of the spot where I took my insect, but my specimen may have strayed; at all events, I hope to investigate the matter more fully next season.

My insect has been compared by Mr. G. R. Crotch and it agrees very well with his *B. scolopaceus*, as also with the description in Germar's "Insectorum Species," p. 202. The single specimen representing *B. scolopaceus* in the Brit. Mus. Coll. does not quite agree with mine, being probably typical *scolopaceus*.—G. C. CHAMPION, 274, Walworth Road, London, S., September, 1870.

Capture in Britain of Tomicus bicolor, Hbst.—I took last June, at Darent Wood (I believe in oak), a single specimen of a *Tomicus*, which I refer to *bicolor* of Herbst, a species which has hitherto escaped record as British, although it has been taken in numbers by Mr. G. R. Crotch, at Down, in Kent. Its differences from *T. alni*, Georg (Marsham, Rye), have been already given in this Magazine.—Id.

Coleoptera near Manchester.—The following are the most noteworthy species I have taken in this district this year, and which, I believe, are hitherto unrecorded from that district (with one exception).

At Drinkwater Park, towards the end of the winter months, moss and haystack refuse yielded *Homalota villosula*, *setigera*, *silvicola*, *oblongiuscula*, and one ♂ example of *crassicornis*; and sifting dead leaves produced *Bolitobius inclinans* and *Hypocyptus pygmaeus*.

At Stretford, on the banks of the Mersey, in flood refuse, beetles were exceedingly abundant during March;—*Ochthebius rufus-marginatus*, however, was the only species I observed worth notice in this place.

At Chatt Moss, in April, under pine bark, I met with a small family of *Phleopora corticalis*, though I only secured one; in *Sphagnum*, *Hydroporus celatus* and *Gymnusa brevicollis* sparingly, and, by beating the pines later on, *Salpingus ater* and *Pissodes notatus* (the latter is doubtless well established in this locality): *Ceuthorhynchus punctiger*, by sweeping, and *Malthodes atomus* by beating fallow (also at Barton on the same tree).

At Clifton, with my friend Mr. Broadhurst, *Malthodes misellus*, ♂ and ♀, by sweeping under trees, chiefly oak; a subsequent visit by my friend in quest of this insect proved unsuccessful, *Malthodes dispar* having replaced it: under stones by the river side, *Geodromicus nigrita* and *Ancyrophorus homalinus*, in company and abundant.

* This locality will, of course, interest Curculiophils in Cornwall as much as those in Kent.—Eds.

At Timperley, in July, *Orchestes scutellaris*; and at the Bollin, out of furze-bushes, *Saprinus* (*Gnathoncus*) *punctulatus*, which also occurred at Sale, on baits. —T. MORLEY, 57, John Street, Pendleton, Manchester, September, 1870.

Captures of Coleoptera in north Devon.—During the month of August last, I discovered localities for the following species, and which I make known for the benefit of entomologists who may visit Ilfracombe, or other of the beautiful spots on the North Devon Coast.

Mesites Turdii.—This species was first discovered by Mr. Wollaston in England—I believe at Mount Edgcumbe in South Devon, and afterwards at Lynmouth; I took a dozen specimens in a decaying sycamore close to Chambercombe Farm, near Ilfracombe. In company with them I found *Phlæophagus æneopiceus*.

Dianthus cærulescens.—This insect was abundant on mossy stones, in the brook, in the valley, about a quarter of a mile beyond Chambercombe Farm, at the side of the wood. With it was *Stenus Guynemeri.*—F. SMITH, British Museum, September, 1870.

Notes on earlier stages of Scotch Phythophaga.—I observed *Melasoma* (*Lina*) *ænca* plentifully, both in the larval and pupal condition, on alders in this neighbourhood, at the end of last July. The pupa, which was active when touched, was attached by the tail to the upper-side of the leaf; the perfect insect appearing in about eight days.

I also found *Coccinella 16-guttata* commonly, in the middle of August, at Luss, Loch Lomond, in the same stages as the *Lina*, on birch. The larva—which is fat, yellowish-white, with two orange-yellow raised lines from head to tail, enclosing two rows of black spots, a lateral row of similar spots, and rather long prolegs,—begins to feed in the middle and not at the edge of the leaf. The pupa is fat, attached as in *Lina*, and, when irritated, jerks up the head, thorax and basal segments of its abdomen. It is blackish, its distinct and shield-shaped thorax bearing a triangular yellow patch on each side, and its abdomen having two yellow spots on each side of the base and three on each side of the apex. The insect remains about twelve days in the pupal state.—J. E. SOMERVILLE, Free Church Manse, Langholm, Dumfries, September, 1870.

Cynips longiventris, Hartig, a species new to the British list.—The hard gall of this *Cynips* is of about the size of a pea, rather flattened, single-celled. Its exterior is granulated, the ground colour a more or less dark red, traversed by more or less regular concentric rings of a pale yellow or greenish tinge. I have met with it for several years past in the months of July, August, and September, on the under-side of the leaves of stunted oak-bushes, occurring in hedge rows in this neighbourhood. It is mostly attached to the midrib, and I have never seen more than one or two specimens on the same leaf, and they are rather scarce. Hartig says that in Germany they are frequent but solitary.

The insect belongs to Section II of Hartig's genus *Cynips*, characterized by that author as follows: "*Abdomine apice nudo*;" and to his sub-division A, "*abdomine elongato, ano sub-acuto, segmento primo fere usque ad apicem prolongato*,"

whilst the specific diagnosis runs as follows: "*C. longiventris*, Hartig: a *Cyn. folii* viz distinguenda, nisi antennis articulis 2 ultimis connatis, colore rufo capitis, thoracis pedumque magis extenso. Long. 1—1½ lin. ♀." (Germar's Zeitschrift f. d. Entomologie, 1840, Vol. ii, pp. 187 and 188).

I pen these lines to induce observers in all parts of the kingdom to look out for this gall, as its distribution in this country is unknown at present.

Notes on stations may be published in this Magazine, or sent by letter either to my friend, Mr. H. W. Kidd, of Godalming, or to myself.—ALBERT MÜLLER, Eaton Cottage, South Norwood, S.E., 26th August, 1870.

Occurrence of Pieris Daplidice in Epping forest.—A week or two ago, I paid a visit to my cousin, Mr. Walter Nash, of Sydenham, and he showed me a small collection of butterflies and moths which he had made in Epping forest, when he was there in 1866. Amongst them I found a fine male *Pieris Daplidice*. There is no doubt that he took it himself, and in Epping forest, for he has never been abroad, and never collected anywhere else; and, school-boy like, he pinned his insects with any pin that came first—the specimen in question being impaled with a rather large, undoubtedly English, black pin. This specimen, which he has very kindly given to me, is well set and in capital condition, with the exception that it has lost its antennæ.—ARTHUR COTTAM, St. John's Road, Watford, September 16th, 1870.

Capture of Vanessa Antiopa near Rochester.—I have to announce the recent capture of a fine female *V. Antiopa* at Delee, Rochester. It was flying about under a pear tree, attracted, I suppose, by the fallen fruit.—JAMES FLETCHER, Delee, Rochester, August 22nd, 1870.

Larva of Vanessa Antiopa.—When at Andermatt, on the 10th of August, I was looking amongst some little willows on the banks of the Reuss, and on one bush my eyes were gladdened with the sight (for the first time) of the larva of *Vanessa Antiopa*. It was nearly full-fed, and I thought looked sickly. I searched the bush well, hoping to find others, but neither there, nor on any neighbouring willow bush, could I find more of these handsome larvæ. The next evening, passing the same spot, I looked to see if my friend were still there, and regretted sadly that Emsworth was so far off; could I have placed it in Mr. Buckler's hands that evening, he would have made a splendid drawing of it. Its sickly look of the previous evening had passed away, and it was only the manifestly near approach to pupation (which could never have been safely accomplished on the journey, had I taken the larva) that induced me to leave it to enjoy its thin mountain air, nearly 5000 feet above the sea.

Curtis's figure gives a very good idea of the larva.—H. T. STANTON, Mountsfield, Lewisham, September 3rd, 1870.

Argynnis Euphrosyne deceived.—I see a remark in this month's (August) "E. M. M." about *Lycana Aleris* being deceived with bits of blue paper. This reminds me of a circumstance which came under my notice some years ago at Leigh. I

was out larva-beating one very hot day early in the summer, and, while resting under the shade of a tree, noticed several specimens of *A. Euphrosyne* fly towards the handle of my umbrella which was lying on the ground near me, and which much resembled them in colour.—A. E. HUBB, Stapleton Lodge, Bristol, August, 1870.

Variety of Polyommatus phlæas.—A very beautiful variety of *Polyommatus phlæas*, now in my collection, was taken here last month by Mr. Edward Taylor, of Dalton. The specimen is very large, and has not a trace of the usual red or "copper" colour, which is entirely replaced by white. A nearly similar one was taken here some years ago.—GEO. T. PORRITT, Huddersfield, 14th September, 1870.

Deilephila livornica near Maidstone.—On the 23rd of August, we had the good fortune to capture a splendid specimen of *Deilephila livornica*. It flew into a lighted room at Hunton, near Maidstone.—E. & H. GREVILLE, Southfields, Wandsworth, September 8th, 1870.

Deilephila livornica near Plymouth.—During a fortnight's stay, in June last, at Cremyll, Mount Edgecumbe, Devon, I saw several specimens of *Deilephila livornica* hovering at dusk over the blossoms of the rhododendron in Mount Edgecumbe Park, but only succeeded in capturing one, their flight being so extremely swift and erratic; on one occasion I saw two at once.—W. T. STURT, 4, Manor Road, Upper Holloway, August 22nd, 1870.

Additional occurrences of Deilephila galii and D. livornica near Exeter.—Mr. D'Orville has taken a second *D. galii* in his garden, and a neighbour of mine has taken a *galii* and two *livornica* over flowers of geranium. I have myself taken a decent specimen of the latter insect, just before 7 p.m. to-day, over flowers of "Marvel of Peru" in my garden: another, which I saw, but failed to capture, was attracted by white Petunias.—J. HELLINS, Exeter, 17th September, 1870.

Deilephila galii at Newcastle-on-Tyne.—My brother brought me a fine larva of *D. galii* on the 7th of this month; it fed for a day or two upon bed-straw, and went into earth on the 11th. It was found in the engine-room of the Carlisle Railway in this town, and had probably been brought in with sand used for the engines. A friend, Mr. M. Henderson, found a small larva feeding on bed-straw on the coast near South Shields, about the middle of last month.

Can any of your correspondents give me a few hints as to the best means of keeping *Lasiocampa rubi*, and other hibernating larvæ, through the winter?—J. HAMILTON, Secretary of the Newcastle-on-Tyne Entomological Society, 16th September, 1870.

Deilephila galii near Stroud.—The son of a clergyman, who lives near here, brought me an excellent specimen of *D. galii* a short time ago; it was caught in his garden.—G. BRAUND, Cairns Cross, Stroud, Gloucestershire, 14th Sept., 1870.

Deilephila galii near Perth.—At the last (September) meeting of the Perthshire Society of Natural Science, Mr. T. Marshall exhibited a larva of *Deilephila*

galii, found by him near Stanley (seven miles from Perth). It is eleven years since the larvæ of this hawk-moth have been found in Perthshire. In 1859 nearly two dozen caterpillars were captured within a few miles of Perth.—F. BUCHANAN WHITE, Perth, September 10th, 1870.

Deilephila galii near Kilmarnock.—One specimen of *D. galii* was caught, and two or three more seen, by my friend, Miss Stewart, near Kilmarnock, in Ayrshire, about the 18th of August.—W. DOUGLAS ROBINSON, Dalbeattie, N.B., September, 1870.

Occurrence of *Catocala fraxini* in the Regent's park.—My friend Mr. John Hodge took a specimen of *C. fraxini* at rest on an ash-tree, in the Regent's park, on the 9th inst.—JOSEPH POTTER, 9, Peckwater Street, Kentish Town, 12th Sept., 1870.

Leucania albipuncta, *Str.*, at Folkestone.—On the 18th of August, the same evening that my friend Mr. Vaughan was so fortunate (p. 87), though not in the same spot, I took a beautiful specimen of this rare *Noctua*. It was in such good condition that it was evidently fresh from the pupa. Among a whole host of specimens of *C. Cytherea*, *A. tragopogonis*, *A. suffusa*, and the ubiquitous *L. pallens* and *N. anthographa*, I caught sight of my white-spotted friend deeply engaged in discussing the merits of my mixture. It did not take long, it may be imagined, to box it. There can be no possibility of confounding it with its plebeian relative *lithargyria* when thus fresh: in the latter, besides the great difference in size, the tint is altogether unlike that of *albipuncta*, which is *very* dark red, with the spot most conspicuous. The row of black spots on the fore-wings of *lithargyria* can with difficulty be traced on those of *albipuncta*, while there is on the latter, in addition, a faint row of short light dashes.

On the 23rd of August, I captured two more, and one again a few days later; these specimens were more or less worn, and two of them are so light in tint that they would probably at first be passed by as *lithargyria*,—though not by the entomologist who was acquainted with both. It is very curious that this *Noctua* should not have turned up in larger numbers before; and I cannot help thinking that specimens may exist in some cabinets, the owners of which are not aware of the rarity they possess.

Agrotis suffusa has been very plentiful, and *saucia* not rare. Fine specimens of *A. pyramidea* and *C. nupta*, and a few of *T. fimbrata*, have also turned out to sugar.

Among the strange visitors to my posts, I noticed a field cricket, and a large green grasshopper particularly engaged with the thick body of a *Noctua*; and from one post a tiny harvest mouse beat a quick retreat. I believe it is a general opinion that the grasshoppers are not carnivorous. But this is an error, at any rate with *Locusta viridissima*, which is not a true grasshopper, but one of the *Locustidae*; I have kept this species in captivity, and fed it with flies and small grasshoppers, which it devoured with great relish, catching them alive as it saw them move.—HENRY ULLYETT, Folkestone, August, 1870.

Lemnides pulveralis and other *Lepidoptera* at Ramworth.—On July 27th last, in company with the Rev. E. N. Bloomfield, and a friend of his, an ardent botanist,

I paid a visit to Ranworth fen. Our drive there was only enlivened by the appearance of a specimen of *Vanessa polychloros*, now a scarce species in this neighbourhood. The wind was chiefly from the north, but the butterfly was enjoying itself on the sunny side of a sheltered copse, till our anxious care provided a more secure shelter in a collecting box.

On our arrival at the fen we found, to our chagrin, that the wind was so strong and cold as to render collecting difficult as well as unproductive, but we were indebted to it for the best slice of luck in the day. On the sheltered side of one of the drain banks where the sun fell warm, *Hydrocampidæ*, *Crambids*, &c., were in swarms, and very lively, and among them a single specimen of *Lemnides pulveralis* turned up, perplexing us greatly by its novel appearance.

We worked hard and repeatedly for more, but without success, and, as nothing was flying, or could be induced to move in the open fen, set ourselves to investigate the interiors of the sallow and alder bushes, where we picked up *Apamea fibrosa*, *Eupithecia tenuiata*, *Peronea Shepherdana*, *Depressaria conterminella*, and various commoner things.

As evening drew on, *Nonagria despecta* flew in plenty on the sheltered side of an alder carr, and a single specimen of *Eupacilia griseana* ventured out—and paid the penalty of his hardihood.

As it became dark, the wind rose still more, with heavy masses of threatening clouds, consequently the night was dark enough, and we turned it to account, having for an hour, in the shelter of the alder carr, the most lively sport of the day.

Lithosia griseola was flying commonly, and *stramineola* was by no means scarce, but *muscerda* was very so, and we only took four. *Leucania impura* was a great nuisance, but among them we got several *phragmitidis*, and a very early and large ♀ *Nonagria fulva*; this, with a most beautiful variety of *Orthotelia sparganella*, terminated our day's work.

As, to add to our difficulties, no food of any kind (nor even civility) was to be obtained at the only "public," and one of us had to walk three miles to procure a few biscuits, I think I may call this day one of the most decided cases of up-hill work that have occurred to me this season.—CHAS. G. BARRETT, Norwich, September 14th, 1870.

Melissoblaptes cephalonica in London.—During the past fortnight, I have captured several specimens of *M. cephalonica* in the City. My proceedings created much astonishment to the crowd which invariably attended me upon the occasion of my captures. This species has a peculiar appearance when at rest, looking somewhat like a short piece of straw squared off at either end. *Ephestia ficella*, *elutella*, and *interpunctella* have been unusually common this year.—H. PRYER, Highgate, 16th September, 1870.

Occurrence of Nonagria clymi at South Shields.—On the 12th of July, I succeeded in capturing a few specimens of this insect among the sand grass on our coast.—C. EALES, Maxwell Street, South Shields, August 28th, 1870.

Gloantha solidaginis at Halifax.—I have the pleasure of being able to add this

species to our local list, having taken it rather freely during the last few days, at rest on the moors in this neighbourhood. — D. BAXENDALE, Akroydon, Halifax, August 20th, 1870.

Suspected occurrence of Notodonta trilophus near Exeter.—On August 25th, I was beating some alder bushes of fifteen or twenty years growth for larvæ, when amongst several common things the larva of a *Notodonta* fell into my umbrella. At first I took it for *dromedarius*, but, after looking at it again when I got home, I fancied it *zie-zac*, but could not quite make it out; and, as it was but small, I put it in a tin box, and fed it for a day or two to see what it would prove to be. Unfortunately, however, before long it got itself into such a position, that in opening the box I injured one of its legs, and it bled to death. It would have been well for my peace of mind, could I have forgotten all about it; but its figure would stick in my memory, and at last I was forced to the conclusion that it must have been *trilophus*; the colour was a light tint of reddish-brown, and on one side there was a patch of light green near the tail, but the point most to be observed was the row of *three dorsal humps*.

Since the discovery of my misfortune, I have thrashed every alder I can get at, and have taken many larvæ that at other times I should have prized; bugs also of vast size and pungent odour have fallen in abundance, but not another *trilophus*.

Boisduval says the larva feeds in June and again in September, and that it should be looked for on the aspen. I hope others will take the hint, and be more lucky than I have been.—J. HELLINS, Exeter, 16th September, 1870.

Notes on the Lepidoptera of Braemar.—I spent from August 1st to 8th at Braemar, chiefly for the purpose of collecting the alpine plants for which the district is noted, but at the same time keeping a sharp look out for *Macro-Lepidoptera*.

In the following list, I have mentioned all the species I met with, as Braemar is, so far as I am aware, a new district to the Lepidopterist, though, from what I saw of it, I should consider it one that would richly repay a summer's collecting. I may mention that I did not collect after 10 p.m. (the nights being chiefly very light); so I cannot say what results sugaring might give, though, to all appearance, it would be very productive.

The village of Castletown of Braemar, where my lodgings were, lies in a hollow near the Dee, at the height of 1100 feet above the sea level, and is surrounded on all sides by high hills and extensive moors and woods. The undergrowth is chiefly birch and juniper, with a sprinkling of other trees, and there is great variety in the surface of the country,—from sheltered and marshy hollows to steep rugged crags and bare hill-sides.

Of *Diurni*, 10 species occurred—*Pieris brassicæ*, *P. rapæ*, *P. napi*, *Erebia Medea*, very abundant in one place, over 1000 feet above the sea level, near the Dee, but nowhere else; *Canonympha Davus*, generally distributed, but nowhere abundant; *C. Pamphilus*, not common, and very dark; *Vanessa cardui*, once seen; *V. urtica*, abundant; *Argynnis Aglaia* was to be seen on almost every moor and by every roadside, but not numerous; *Lycena Alexis*, abundant; *L. Artaxerxes*, one rubbed specimen: this insect occurs at various places all along the valley of the Dee, and is abundant on the coast south from Aberdeen.

On the heather, I found one larva of *Orgyia antiqua*, and several larvæ of *Bombyx rubi* and *B. callunæ*.

Of *Geometræ*, I caught 21 species; *Crocallis elinguaris*, four or five at rest on heather, on a moor near the village; *Fidonia pinetaria*, several, on the same moor, but rubbed (Aberdeenshire will thus have to be added to the previously recorded localities for these two species); *Larentia didymata* and *L. cæsiata*, both in countless swarms; *L. pectinitaria*, not common; *Eupithecia sobrinata*, very abundant among juniper; *Thera variata*, not uncommon; *Hypsipetes elutata*, rare, and in bad state; *Melanthia rubiginata*, abundant in the evening, about alder trees; *Melanippe fluctuata* and *Coremia munitata*, rare.

The genus *Cidaria* was represented by 7 species—*C. miata*, once, apparently newly emerged; *C. russata*, all the varieties abundant; *C. prunata* and *C. testata*, abundant; *C. populata*, abundant, and very variable; *C. fulvata* and *C. pyraliata*, both scarce; *Eubolia mensuaria*, not uncommon; *E. palumbaria*, very common on all the moors; *Carsia imbutata*, very local, but not very scarce.

Of *Noctuæ* I only caught 6 species, owing to my not collecting at night; *Chareas graminis*, abundant; *Teniocampa gothica*, one larva; *Hadena pisi*, one larva on a species of *Juncus* (I never happened to find the larvæ of this species on *Pteris*, though I have frequently found them on Scabious, *Menyanthes*, &c., and, in confinement, I find they will eat hawthorn readily); *Plusia gamma*, once; *P. interrogationis*, abundant on all the moors, but very difficult to net, owing to its rapid flight; *Stilbia anomala*, once (this species is common in various localities on Dee-side).

Though too late for *Psodos trepidaria*, I have been informed that it is very abundant in the glens about Braemar, in July; and I have seen a specimen of *Geometra papilionaria* caught in that neighbourhood.—JAMES TRAILL, Old Aberdeen, August, 1870.

[In "The Natural History of Dee Side and Braemar," by the late Dr. W. Macgillivray, printed for private circulation in 1855, under royal auspices, and edited by Dr. Edwin Lankester, is contained,—together with an extensive list of *Coleoptera* drawn up by Mr. Andrew Murray, but which contains many scotch species not properly to be attributed to the district in question,—a confessedly imperfect list of species of the other orders of insects then observed in that district, principally extracted from Dr. Macgillivray's M.S.S. The *Lepidoptera* are therein represented by fifty-four species, including thirteen of the forty-two above mentioned. So much care has been taken in other respects in "getting up" this posthumous *édition de luxe* (the names of Lyell, Hooker, Balfour, Babington, Ward, Jardine, Yarrell, Forbes, Nicl and Keith Johnston, testifying to its exhaustiveness and accuracy in the several branches of Natural History, for which these gentlemen are authorities), that it is to be regretted that the Entomological portion is so imperfect.

Mr. B. Jazdowski (The Entomologists' Weekly Intelligencer, Vol. 2, 1857, p. 171) has recorded *Erebia Medea* (*Blandina*), *Cænonympha Davus* and *Argynnis Aglaia* from Braemar.—EDS.]

Description of the transformations of Argynnis Selene.—At length—after repeated failures—I have succeeded in rearing this species from the egg to the pupa, and

am able to offer some account of its transformations. And I feel more pleasure in doing so from the fact that, although I have never been able to speak out decidedly till now, I have long felt that there is some confusion in the accounts already published; and I am sure that unless this species is very variable, the descriptions after Duponchel and Hübner, which do duty in our books, are defective and inaccurate.

On the 8th of June, 1870, whilst on a visit to Mr. F. Merrifield, I was taken by him to a locality near Brighton, where the butterflies were on the wing; and I was fortunate enough to secure a pair *in cop.* These I took home with me, and placed the same evening on a plant of *Viola canina*, and next day I noticed several eggs deposited in various sites,—on the upper and under surfaces of the leaves, as well as on the stems of the plant. The larvæ hatched in about eleven or twelve days, that is about June 20th, and were all out on the 22nd, and, after breakfasting on their egg-shells, fed away at once on the violet; for a time they kept abreast, all feeding well; and with a view of trying to procure by artificial means a rapid development, and so to avoid the dangers of hybernation, I had a portion of them placed in a hot-house.

However, I did not confine my attention to this portion alone, but attended to all the larvæ carefully, and by the 18th July, was rewarded by finding one of those not in the hot-house plainly giving tokens that he was bent on outstripping his fellows; by the 24th, he had gained a length of half-an inch (all the rest, whether in hot-house or not, remaining—as I had found so many broods in former years remain—at the length of about three-eighths of an inch, and, apparently, meaning to hibernate); and by the 30th, it had attained its full length of nearly an inch. On August 6th, it fixed itself on a bramble stick, and on the evening of the 7th, became a pupa.

The egg is of a dumpy blunt sugar-loaf shape, with a thin soft glistening shell, which is ribbed with about eighteen ribs, and transversely reticulate, but not very boldly; its colour at first is a subdued pale yellow; next becoming more drab; afterwards the lower part of the egg becomes dirty whitish, and the upper part purplish-black, no doubt from the head of the larva showing through.

The newly-hatched larva is a little pale olive creature, with shining black head; the pale brownish tubercles distinct, and bearing each a pale, longish, jointed bristle. By the time it is about two lines in length, the skin looks translucent, the colour is more greenish, the tubercles are larger—bearing the long bristles or hairs as before, and there now appear four pairs of opaque brown spots placed on the sides of the fifth, seventh, ninth, and eleventh segments. By the time the length of a quarter of an inch is obtained, there is another change, and then the fine bristles give way to black hairy spines; the colour is smoky-olive on the back, with a paler stripe of almost a dull yellow along the side, and a pale spot below each sub-dorsal spine, followed again below by a stripe of the darker colour of the back. On attaining three-eighths of an inch in length, its appearance is again changed, it then has a broad dorsal stripe of pinkish-grey, a sub-dorsal stripe of blackish-brown, and below it, on the sixth, eighth, tenth and twelfth segments, are blotches of orange-ochreous; below these, on all the segments, there are similar blotches, forming a somewhat interrupted broad stripe.

The larvæ, which are hybernating at this stage, have turned gradually to almost a dull pale orange colour throughout, the head and spines (all of the same length) remaining shining black.

After the next moult there is again seen the previous arrangement of colours, but rather brighter, the spines and head still black as before—the larva being about five-eighths of an inch in length.

After another moult, it assumes the final dress; it is then three-quarters of an inch long—increasing afterwards to about an inch—tolerably uniform in bulk, but, when looked at from above, widest about the fifth and sixth segments, and tapering thence very slightly to the tail: the segmental divisions well defined; the head rather notched on the crown; of the six rows of spines, the upper—or sub-dorsal—rows are rather stouter than the others, and the front pair of this row—which are the only spines on the second segment—are now rather more than twice as long as the rest, and, after tapering for some distance, become thicker again at their tips, and, standing forward a little apart from each other over the head, remind one much of a pair of snails' horns; on the third and fourth segments, there are but four rows of spines, and those finer than the rest; as a whole, the spines may be described as conical, thick, fleshy, shining, and semi-translucent, ochreous in colour, tinged with pink, and beset with fine pointed black bristles; those spines on the second, third, and fourth segments being exceptionally tipped with black, while the two lateral pairs are whitish at the base.

The ground colour of the full-grown larva is a velvety smoky-pink; there is a dark brown dorsal line, which throughout its course expands and contracts twice on each segment: in front of each sub-dorsal spine and partially enclosing it, is a velvety black spot delicately edged with whitish, while behind each spine is a blackish interrupted streak; immediately beneath the whole row runs a much interrupted dark brown line; broad black spots are placed also in front of the spines in the lateral row: the spiracles are black, set in ovals of a pinkish tint, rather paler than the ground colour; and below them, bearing on it the sub-spiracular row of spines, runs an inflated stripe of pinkish-red paler than the ground, showing faintly and interruptedly on segments three and four, but distinctly throughout the remainder. The belly is of a deep pinkish ground colour, freckled with dark brown on the sides; prolegs pale pink, tipped with blackish-brown; the anterior legs black and shining.

Most of the lines and streaks are more or less broken by a sort of warty or granulated texture of the skin in places, each little wart being of the ground colour, emitting a minute soft hair, so that the body has a delicate and scattered pubescence.

The pupa is suspended head downwards; it is about half-an-inch in length, thick and obtuse in front, the abdomen thickest in the middle, thinner near the thorax; on each side of this part the edges of the wing-cases project, thus forming a cavity; the tip of the abdomen, viewed in profile, is blunt and rather abruptly curved back to its point of attachment; the eye- and antennæ-cases well developed, but all angles rounded off; the sub-dorsal rows of spines of the larva are still represented by two rows of blunt spikelets—not very projecting—along the back of the abdomen. In colour, it is brownish-ochreous on the wing covers, brown on the abdomen and thorax, and darker brown round the concave part of the abdomen;

on the beginning of the keel of the thorax is a black V mark pointing towards the head, with a silvery metallic spot on either side, and one on each side of the head; other metallic spots are at the base of the four pairs of spikelets next the thorax, the first pair the largest; towards the tip of the abdomen three pairs of the spikelets have a dark brown curved streak from each, uniting in front, and pointing forwards. The spiracles are plainly visible and black; behind them is a stripe of pale brown. The wing-cases have at their terminal borders two large blotches of black, another towards the middle, one at the base of the wing, and one on each of the eyes; the ground colour most delicately reticulated with blackish-brown.

Unlike its congener *Euphrosyne*, the larva of *Selene* has an aversion to the sun's rays, and does not at any stage of its larval existence care to expose itself to their direct influence, but reposes either on the under-sides of the leaves of the food-plant, or else on the stems while shaded more or less by the leaves, and feeds while young, and indeed nearly up to its last moult, on the youngest and tenderest leaves of the violet, but thenceforward has a more accommodating appetite, and attacks, without much choice, any of the mature leaves, eating out large portions of them at a time, and in a few days making considerable ravages on the plant.—WM. BUCKLER, Emsworth, August 13th, 1870.

Male Orgyia antiqua attracted by female O. gonostigma.—Some years ago, having reared a number of females of a second brood of *O. gonostigma*, I placed them, in a cylinder cage, on a garden wall. Shortly afterwards, my attention was called to numerous male *O. antiqua* fluttering about the cage, vainly endeavouring to effect an entrance. For some, to me now, inexplicable reason, or rather want of reason, I contented myself with observing the phenomenon, without allowing the gay little flutterers the opportunity of a *tête-à-tête* with the fair inmates. I mention this occurrence partly because it has not before been recorded, and partly because some lover of hybrids may desire to rear the product of an unnatural selection.—H. G. KNAGGS, Kentish Town, September, 1870.

Variety in the egg of Cerura vinula.—The well-known chocolate coloured egg of *C. vinula* is common enough; but, at the latter end of June, I found an egg of similar shape, only opaque white; it was on a leaf of *Salix fragilis*. It produced a "puss" genuine enough in appearance, though it unfortunately died in early kittenhood.—R. C. R. JORDAN, 35, Harborne Road, Edgbaston, Birmingham, September, 1870.

Larvæ of Gonoptera libatrix.—Larvæ of *G. libatrix* were very abundant on a willow in my garden this year. They were allowed to spin in a glass globe—all the larvæ, about a day after spinning, changed in colour, a large jet black spot appearing on the second and also on the third segments. This spot grew, and was thought by me to be disease; such, however, was not the case, as all turned into healthy and lively pupæ, and produced perfect moths. It is therefore clearly a natural shade in the metamorphosis, but, at all events to myself, quite a novelty.—ID.

Presentation of the late Mr. Allis's collection.—It may be interesting to your readers to know that the grand collection formed by the late Mr. T. H. Allis has been presented by his father to the Yorkshire Philosophical Society's Museum here.—T. J. CARRINGTON, 31, Holgate Road, York, August 18th, 1870.

ON CERTAIN BRITISH HEMIPTERA-HOMOPTERA.

BY JOHN SCOTT.

(Continued from page 76).

REVISION OF THE FAMILY CIXIIDÆ.

We have no nearer relatives of the *Delphacidæ* in England than the *Cixiidæ*; (nor are there any, as far as I am aware, on the Continent), and even their relationship is not of the closest kind, the shape of the face with its keels being the strongest outward and visible sign of it.

As in the *Delphacidæ*, so in the *Cixiidæ*, many of the species are exceedingly like to each other, and this has led to great confusion. Authors have not known what to do with them, and so they have been separated by one, put together by another, and finally mixed up almost indiscriminately. But here again the processes attached to the genital segment of the males serve as a simple but great guide. They are not shaped as in the *Delphacidæ*, neither are they placed as in that family, but are situated on the sides and project beyond the end of the segment, and support the tube; and, for general purposes, I have denominated them "claspers." Attached to the diagnoses of the species will be found a drawing of some two or three of them, showing the differences of structure, and which, I hope, will be considered useful.

Of the nine species enumerated by Curtis, in his *British Entomology* (673), five only remain, when the varieties have been disposed of; and of the four described by the Rev. T. A. Marshall, in the *Ent. Mo. Mag.*, Vol. i, pp. 154 and 155, *musivus*, Germ., must be sunk, as the insects in Mr. Douglas' collection, and from which the description was made, are *stigmaticus*, Lat. *C. musivus*, has not as yet, I believe, been found in this country. But Mr. Marshall gives *cunicularius*, L., and *stigmaticus*, Lat., as varieties (*a* and *d*) of *nervosus*, L.; and, as these are good species, his number is increased by one, and so reaches that of Curtis. By the time this paper shall have been completed, I shall have described 10 species, divisible into two genera, *Oliarus* and *Cixius*.

Family CIXIIDÆ.

Cixiidæ, Stål, Hem. Afr. iv, 129.

Dictyophoridæ, Kirschb., Cicad. 11.

Head not produced in front. *Antennæ* short, inserted at some distance below the eyes, 1st joint concealed, 2nd short, sub-globose. *Eyes* faintly sinuate beneath. *Ocelli* 3 or 2. *Elytra* membranous, nerves generally granulated. *Tibiæ*, 3rd pair with two or three spines, and *without* a moveable spur. *Abdomen*, 1st and 2nd segments sealed together.

Crown, posterior margin angulate emarginate.

Ocelli 3.

Scutellum with five longitudinal keels.

Genus 1.—*OLIARUS*, Stål.

Crown, posterior margin concave.

Ocelli 2.

Scutellum with three longitudinal keels.

Genus 2.—*CIXIUS*, Lat.

Genus 1.—*OLIARUS*, Stål.

Head: crown frequently longer than broad, widest at the base, deeply concave, and with a more or less distinct middle keel, frequently not reaching to the convex anterior margin; *forehead* small, composed of two triangular pieces separated by a middle keel. *Face* dilated, with three longitudinal keels, lateral margins rounded. *Clypeus* large, separated from the face by an angular suture, and with a distinct middle keel. *Ocelli* 3, placed as follows, viz.:—two close to the margin of the face near the lower margin of the eyes, and one at the apex of the middle keel of the face.

Thorax: *pronotum* very small; posterior margin deeply angulate in the middle and rounded off towards the posterior angles; central keel very short, side keels semi-circular, generally just beyond the posterior margin of the eyes, and running parallel with them. *Scutellum* with five longitudinal keels.

Elytra without bands or spots.

A.—Crown longer than broad1. *pallidus*.

B.—Crown transverse2. *leporinus*.

A.—Crown longer than broad.

Species 1.—*OLIARUS PALLIDUS*.

Flata pallida, H. Schf., D. I., 154, 4.

Pentastiridius pallens, Kirschb., Cicad., 45, 9 (1868).

Elytra transparent, pale yellowish, nerves pale brownish-yellow, minutely, but somewhat indistinctly, granulated.

Head black; crown longer than broad, marginal keels brownish-yellow, middle keel black, rather indistinct, not reaching to the anterior margin. *Face* and *clypeus* keels brownish-yellow. *Antennæ*, 2nd joint brown.

Thorax: *pronotum* black, keels and posterior margin yellow or yellowish-white. *Scutellum* black, side margins and apex narrowly brown; keels black, or sometimes piceous, the 2nd and 4th keels slightly diverge for about two-thirds their length from the base, where they then contract towards the apex. *Elytra* transparent, very pale yellowish, nerves minutely but somewhat indistinctly granulated, pale brownish-yellow as far as the transverse nerves, from thence to the apex brown; marginal nerve not granulated, but round the apex, on the inside, narrowly margined with brown; the cuneate patch adjoining the anterior margin more or less brown interiorly. *Wings* clear and

transparent, nerves brown. *Legs* fuscous, or brownish-yellow; *thighs* dark brown; *tibiae*, 1st and 2nd pairs fuscous, 3rd yellowish, with a fuscous streak along the inside; *tarsi*, 3rd joint of the 1st and 2nd pairs piceous, 3rd pair, at the apex, brown.

Abdomen black, margins of the segments narrowly yellow.

Length, $2\frac{1}{2}$ —3 lines.

Easily separated from the next species by its narrower head and yellower elytra. I have not seen any recently-captured examples of this species, and I am indebted to Mr. J. C. Dale for the loan of his specimens, and the following communication with respect to their capture:—"The first was taken by sweeping grass on the downs by Marley Wood, Lulworth, afterwards on the heath by the Aylestone in Purbeck, and since near Ryde, Isle of Wight."

Curtis, who supposed it to be the *leporinus*, Lin. (B. E., 673, 9), says—"in abundance on coarse grass by the side of the Avon, Clifton." Time of appearance, June and July.

B.—Crown transverse.

Species 2.—*OLIARUS LEPORINUS*.

Cicada leporina, L., F. S., 895 (1761); S. N., ii, 711, 43 (1767); Schrank, Enum. Ins. Aust., 501, 260 (1781); Panz., F. G., 61, 19 (1799).

? *Flata pallens*, Germ., Mag., iv, 101, 2 (1821).

Flata leporina, Germ., Thon Archiv., ii, 50, 50 (1830); H. Schf., 144, 4.

Pentastira leporina, Kirschb., Cicad., 44, 2 (1868).

Elytra pale, transparent, nerves brown, granulation minute, but distinct, black.

Head black; *crown* transverse, marginal keels yellow. *Face* and *clypeus* keels yellow, middle keel of the former furcate immediately below the margin of the forehead, with which it forms a small triangle. *Antennae* yellow.

Thorax: *pronotum* black, keels and posterior margin whitish or yellowish-white. *Scutellum* black. *Elytra* pale, transparent, nerves brown as far as the transverse nerves, from thence to the apex dark fuscous; granulation black, minute, but distinct, the granules disposed at somewhat regular intervals; anterior marginal nerve not granulated, the cuneate patch brown. *Legs* yellow; *thighs* fuscous, apex narrowly yellow; *tibiae* sometimes pale fuscous at the base; *tarsi*, 3rd joint brown.

Abdomen black, sides and margins of the segments narrowly yellow.

Length, $2\frac{1}{4}$ — $2\frac{1}{2}$ lines.

Two old specimens are in the collection of Mr. J. C. Dale; another example was taken at Deal by Mr. E. Saunders at the end of June, on *Tamarix*.

Genus 2.—*Cixius*, Lat.

Head: crown widest behind, deeply concave, with a depressed middle keel; posterior margin concave, anterior margin convex; *forehead* very small, almost in the same plane with the crown, generally composed of two triangular pieces, separated by a middle keel. *Face* much dilated, with three longitudinal keels. *Clypeus* large, separated from the face by an angular suture, and with a distinct middle keel. *Ocelli* 2, placed close to the margin of the face, between the eyes and antennæ.

Thorax: *pronotum* as in *Oliarus*. *Scutellum* with three longitudinal keels.

Nerves of the elytra distinctly granulated with black; the granules along the anterior margin always largest.

A.

Elytra pale, transparent; the base, a narrow band before the middle, frequently much interrupted, or sometimes nearly obliterated, and another broader one before the apex, brown...1. *cunicularius*, Fab.

1.—*Marginal nerve* with two or three of the granules at irregular intervals, generally united.

B.

Elytra without a band before the apex, the first nerve at the base, as far as the bifurcation, brown or black, transverse nerves black, the space between them and the apex with several more or less distinct pale fuscous, or brownish patches ... 2. *nervosus*, Lin.

Head and *face* yellow, or pale brownish-yellow; *pronotum* pale chestnut-brown, darker on the sides. *Elytra*: marginal spots somewhat square. *Genital organs* pale brownish or yellowish...

3. *intermedius*, Fieb.

Elytra: marginal granules not square or elongate...4. *brachycranus*, Fieb.

Head black, keels broadly pale brownish-yellow. *Face* brownish-yellow. *Elytra* almost invariably with three short black streaks along the anterior margin, and a short transverse fuscous streak midway between the cuneate patch and the apex ...

5. *contaminatus*, Lat.

2.—*Marginal nerve* without united granules.

C.

Elytra without bands.

Elytra dark grey or brownish-grey, with several irregularly disposed, and more or less confluent, darker spots6. *stigmaticus*, Germ.

Elytra pale, marginal granules elongate, somewhat thickly placed, apex between the nerves with pale fuscous spots. *Clavus*: marginal nerve, next the apex, black7. *simplex*, H. Schf.

Elytra somewhat whitish, marginal granules elongate, and placed at wide intervals, *all the nerves white*, apex without spots between the nerves8. *similis*, Kirschb.

A.

Species 1.—CIXIUS CUNICULARIUS.

Flata cunicularia, Fab., Sys. Rhyn., 55, 48 (1803); Germ. Mag., iii, 195, 6 (1818); Thon Archiv., ii, 48, 27 (1829).

Cercopis Dionysii, Panz., F. G., 34, 24.

Cixia cunicularia, Burm., Handb., ii, 157, 3 (1835).

Cixius Dionysii, Curt., B. E., 673 (1837).

Cixius nervosus, Flor, Rhyn. Liv., ii, 22, 1 (1861); Marshall, Ent. Mo. Mag., i, 154, 1, var. a (1864).

? *Cixius dorsalis*, Hardy, Tyneside Nat. F. C., i, 430 (1850).

Elytra pale, transparent, sometimes of a milky hue, the base, a narrow band before the middle, frequently much interrupted or sometimes nearly obliterated, and another broader one before the apex, brown.

Head yellow; *crown* with a black, almost square, spot on each side of the middle keel. *Face* more or less pitchy-brown, darkest along the lower margin, keels yellow or whitish-yellow. *Clypeus* brownish, middle keel yellow, side keels pitchy-brown (in the ♀, the entire clypeus and keels are generally yellow). *Antennæ* yellow.

Thorax: *pronotum* yellow, more or less brown between the keels. *Scutellum* pitchy-black, or deep chestnut-brown, apex transversely wrinkled, middle keel paler than the disc, not reaching the apex distinctly, but appearing to terminate in a line with the apex of the side keels. *Elytra*: nerves pale yellowish, granules black, of slightly irregular size, and placed at irregular intervals, frequently in pairs diagonally towards the apex, each granule bearing a short black hair; junction of the nerves with the marginal nerve round the apex black, the spot generally of a triangular shape; the band before the middle is sometimes entirely obliterated or composed of one or two patches, or its position is alone indicated by a small patch next the anterior margin; the inner margin of the band before the apex always commences on the anterior margin in a line with the base of the cuneate patch, and curves inwards to the first transverse nerve from whence it passes almost straight across to the apex of the clavus. *Wings* pale, or somewhat fuscous, or frequently the inner portion towards and at the apex dark fuscous; nerves fuscous. *Legs* more or less fuscous-yellow.

Abdomen black, outer lower angles of the segments generally orange-reddish or yellowish: *genital segment* black, "claspers," &c., yellowish, or pale brownish-yellow. Length, $2\frac{3}{4}$ — $3\frac{1}{2}$ lines.

The band across the apex of the elytra is quite sufficient to show the difference between this species and *nervosus*, with which it has been confounded. Sometimes the entire elytra are of a dark brown or reddish-brown colour with the exception of a pale space before the base of the cuneate patch. This is the form *C. Dionysii*, Curt. In Mr. Bold's collection, there is a singularly small ♂ (only about two lines long) with the apex of the elytra almost entirely dark fuscous.

Less common than *C. nervosus*, with which species it is frequently taken by beating trees and bushes in woods, &c., in June and July. I have seen specimens from Dr. White of Perth, Mr. Hardy of Old cambus, Mr. Bold of Newcastle-on-Tyne, Mr. J. C. Dale of Glanville's Wootton, and those taken by Mr. Douglas and myself here.

(To be continued).

DESCRIPTION OF THE LARVA OF *DEILEPHILA GALII*, WITH NOTES ON ITS VARIATION.

BY WILLIAM BUCKLER.

Up to the present autumn it had been my chance to have seen but one larva of *D. galii*, and that a dead one, as long ago as 1859. This corpse I figured, but, as may well be supposed, I could never feel satisfied that my figure was at all trustworthy.

The satisfaction, therefore, and the feverish delight which have been wrought in me lately by the gift of four, and the loan of not less than twelve, larvæ in various stages of growth, may be better conceived than described!

To Mr. Nicholas Cooke and Mr. Henry Terry my warmest thanks are due for this great kindness, of which I have availed myself so far as to take fifteen figures, and to put together the following observations, which may, perchance, be deemed not altogether uninteresting.

The larvæ arrived at intervals from the 6th to the 26th of September, 1870, and fed freely on flowers, unripe seeds and leaves of *Galium verum*, and occasionally ate a little *Fuchsia*; when full-fed they were restless, and wandered about for a day or two before they settled down to spin. They made for their covering a rather coarse network of threads, which bound the sand beneath them with the *Galium* above into a slight cocoon; and they had all retired by the 8th of October.

In form, these larvæ reminded me of some of the *Chærocampæ*; for, although the thoracic segments are but slightly retractile, yet they are tapered off rapidly to the head, which is rounded, and smaller than the second segment; the rest of the body is tolerably cylindrical, just a little thickest in the middle segments, and rather less bulky behind, the anal prolegs being broad and squarely developed: the caudal horn is curved backwards, its point arching over the anal flap, and it is rough, with minute bristly points. Each segment of the body, excepting the thoracic and posterior, has a very broad sub-division in front on the back, followed by six narrow ones, though while the larva is very young the two hinder folds are united into a broader one, the last wrinkle being smoothed out; these wrinkles or folds extend as low as the spiracles; just in the spiracular region there is a longitudinal somewhat puckered inflation, but marked only by dimples when the creature is in repose; a few very short bristly hairs fringe the prolegs.

With regard to colour, I propose to describe the changes that occurred in the smallest of six young larvæ up to its adult state, before speaking of varieties. This larva, then, on its arrival, was about three-quarters of an inch in length, of a rather bright full opaque green, the belly and legs a little paler than the back and sides; with dorsal, sub-dorsal, and sub-spiracular stripes of pale ochreous-yellow: upon the sub-dorsal stripe on the front of each segment appeared an indication of an oval spot of a little deeper yellow, with the faintest possible outline above of black; the horn at this time but slightly curved, semi-transparent, and of a reddish tint tipped with crimson; the hinder wrinkled portions of the segments dimly showing some whitish-green freckles. On moulting it changed into a deeper, brighter and purer opaque green dress, in which the previous design was further developed. The green on the back was now deeper than that of the side, and the belly and legs a little paler still; on the sub-dorsal stripe at the beginning of each segment the oval spots were enlarged, and tinged with bright orange, edged above and below with black; the end of the stripe towards the horn bore something of an elongate pear-shaped spot; a freckling of pale yellow specks distinctly appeared on the hinder portions of each segment as well as on the sides; the spiracles white, outlined with black; the head pale bluish-green, marked with black near the mouth; a pale bluish-green plate on the second segment; hinder extremities pale green, slightly tinged with pink; the horn pinkish-ochreous, tipped with deep crimson.

When a length of an inch and a quarter, or thereabouts, is attained, the final moult takes place, and a great change is at once apparent; the

stripes have totally disappeared, and the head, the plate on second segment, with the anal flap and prolegs, show purplish-red. In the individual whose changes I have been tracing the ground-colour at first was opaque black, relieved only by the pale yellow sub-dorsal spots, a few small freckles, and the spiracles; but investigation with a lens disclosed an infinity of little puckers and wrinkles, reminding one of the texture of crape; by degrees these wrinkles were smoothed out as the creature grew, and the final dress was assumed.

I shall now describe this same larva when mature, and then give notes of the chief varieties, which came under my notice.

Length, when stretched out, $2\frac{7}{8}$ inches. The back and sides of a deep bronzy olive-green, but below the spiracles, and on the ventral surface, the colour is a smoky deep purplish-pink; although the boundary is clearly defined, yet a gleam of the one colour tinges almost imperceptibly the other, both above and below.

There is no sub-dorsal line, but in its place a row of fourteen somewhat roundish spots, four of them on the thoracic segments small, the others large, the hinder one somewhat pear-shaped, pale golden-yellow in colour, and set in transverse ovals of deep black, which melt into the ground colour; the spiracles yellow, outlined with black, and surrounded by a cloud of darker olive than the ground colour; a few small yellow specks are sprinkled along the sides; one can well make out a dorsal thin stripe of deep ochreous-olive, wide at the beginning of each segment, looking as though it were showing dimly through the surface from a depth below. The head is purplish-pink, the mouth black, with a streak of pale yellow above it, and yellow bases to the papillæ, and just above them is a narrow circumferent band of black; the plate on the second segment, the anal flap, and the prolegs are dark pinkish-red; the anterior legs black, the ventral prolegs purplish-pink, with an outward bar of black near their extremities; the horn is semi-translucent, and blood-red: the whole surface of the skin, excepting on the thoracic segments, is now brilliantly polished, and resplendent with the play of light at every movement.

Taking the above as my type, I could make two gray'd varieties as to ground colour—the pale olive and the black; and each of these—as well also as my dark olive type—furnished a further sub-division through variation in points of detail.

Var. 1. Neither a light nor a dark olive-green, but between them, with the large yellow spots developed into pear shapes, the small end of each projecting forwards as a spot on the segment in advance.

Var. 2. Dark reddish-brown, with just a tinge of olive, and with

the addition to the usual obscure dim dorsal line of a bright pale ochreous mark at the beginning of each segment, terminating at the end of the broad first sub-division, which appears like a black band; the bright yellow sub-dorsal spots as before.

Var. 3. The ground colour of the back and sides a pale brownish ochreous-olive; the sub-dorsal pale primrose-yellow spots and the spiracles environed with black; the belly and prolegs rose-pink.

Var. 4. A deep jet black on the anterior segments, bluish-black on the others; the head, thoracic plate, and anal extremities of very dark purplish-red; the sub-dorsal spots of a dirty and dingy yellowish-drab tint, with their centres more or less filled up with blackish-brown, in one or two instances wholly obliterated.

Var. 5. Ground colour entirely bluish-black, the deepest tinge of purplish-red on the head, the plate behind it, and the anal extremities; blotches appear on the side of the anal flap, which, with the sub-dorsal spots, the spiracles, and an extensive irroration of small dots, are all of the purest pale golden-yellow, the black ground being left unbroken as a band across the back from one sub-dorsal spot to the other.

Concluding my own remarks, I may state that, in every instance, the skin after the last moult was black for a day or two, as previously mentioned; but at this time one may judge of the colour the larva will eventually assume, by the tint of the head, thoracic plate, and anal extremities; these parts, if then quite black, indicate that the ground colour will be black to the end of its career; but if they are of deep purplish-red, the larva will turn to a dark olive or brown; or should they be of a bluish-green, slightly tinged with pink, a pale olive larva will result.

So far, I have put down only what I have myself seen in the living larvæ, but I may state that amongst some figures most kindly lent me by Mr. Boswell Syme, there was one of a black variety, with the sub-dorsal spots of a dull crimson colour.

Mr. Boswell Syme has had altogether about two hundred larvæ, and says "head always red," whilst Stainton, in his notes made from living larvæ, says "head pale greenish," with the memorandum that Sepp's figure came nearest to his specimens.

The pupa¹ I examined is $1\frac{5}{8}$ -inch long, including the short, curved horn or anal spike, and moderately stout; the head rounded and narrower than the thorax, the anal extremity a little tapered but otherwise tolerably uniform in bulk; the wing-cases lie close to the body, and extend as far as the eighth abdominal segment, the last five segments are rather deeply cut and flexible, the sides of the incisions smooth, all the other surface granulous.

Its ground colour is a deep red, and this is much suffused or sprinkled with black, especially on the wing, antennæ, and trunk cases, also on the back of the thorax; this last has, however, a dorsal line, and the pieces of the thorax are outlined with the ground colour; the antennæ and ends of the wing-cases are relieved by a fine marginal streak of flesh colour, and joining them; the smooth sides of the abdominal incisions are deep, and rather purplish-red; the spiracles blackish-brown.

Emsworth: October 12th, 1870.

ON THE BRITISH SPECIES OF *PLATYCHIRUS*.

BY G. H. VERRALL.

This genus was included under *Syrphus* by Walker in the "Insecta Britannica," but is now generally considered distinct, being separated by the following characters:—the epistoma and scutellum are æneous, without any yellow markings, though the epistoma is often dusted with yellow tomentum; the abdomen is linear, marked with three or four pairs of sub-quadrate spots; and, especially, the front tarsi of the males are always dilated, whence the genus derives its name; the species have also a strong family resemblance, which will at once separate them from their allies. Walker described six species, all of which, with the addition of *immarginatus*, I included in my list published last January, though I had not seen any specimens of *fulviventris*; I have since met with four others, so that we have now eleven British species. They are as follows:

1. *manicatus*, Linn.: distinguished by the considerably produced conical epistoma; by the male having the *two* basal joints of the front tarsi forming a large oval, whitish-yellow, flat disc, spotted with black beneath, the other joints brownish and moderate in size; and by the dull thorax of the female. It is common in meadows almost everywhere, and swarmed at Loch Rannoch last June.
2. *melanopsis*, Loew: this species is somewhat allied to the preceding, but is smaller, with the abdominal spots smaller and redder, especially the first pair; the epistoma is less conical, and the male has the *three* basal joints of the front tarsi forming an elongate oval, whitish disc; the female is said to have the abdomen much more ovate (even resembling *Syrphus corollæ*), and the thorax is shining. I found one male among my Rannoch captures, but do

not recollect exactly where I took it; it was first described by Loew in 1856, who, in company with Schiner, found it near the tops of the Carinthian Alps.

3. *peltatus*, Meigen, is distinguished by its rather large size, blackish colour, moderately produced epistoma, luteous under-side of the third joint of the antennæ; the male by the coarse fringe of black hairs behind the front femora, luteous front tarsi with only the metatarsus enlarged, the other joints being abruptly narrower; the female by the whitish-yellow abdominal spots, all of which, except the first pair, lie on the fore-margins of the segments. It is common and widely distributed, and was rather abundant at Loch Rannoch, where I noticed it was very fond of sitting upon the leaves of shrubs in company with some *Syrphi*, which much resembled it.
4. *albimanus*, Fab., is smaller, and is distinguished by the peculiar colour of the abdominal spots; the male has the abdomen rather narrow, with three pairs of hoary æneous spots, the front tarsi luteous, altogether dilated, the second joint being about half the length of the first; the female is steel-blue, with three pairs of hoary, light blue spots on the abdomen. It seems to be very generally distributed, but never abundant.
5. *scutatus*, Meigen: this species is rather allied to the preceding, but the antennæ are luteous beneath and the abdominal spots yellow, and more quadrangular; the male also has the abdomen still more narrow, the front tibiæ with a tuft of black hairs on the outside and the luteous dilated front tarsi with the first joint about eight times as long as the second; in the female the abdominal spots are rather small, nearly twice as broad as long, and do not touch the fore-margins of the segments. It is as widely distributed as *albimanus*, but rather less common.
6. *clypeatus*, Meigen: this is the first of a series of closely allied species; it has the epistoma but very little produced, and with only a slight knob, the abdomen has three pairs of reddish-yellow, sub-quadrate spots, the first pair being rounded and rather small, the legs are luteous; in the male the anterior femora have a moderate pubescence of black hairs behind, the front pair have a blackish streak above, and the middle pair are blackish at the base, the front tibiæ are whitish at the tip, and, as well as the tarsi, moderately dilated; the female has the anterior femora almost all

luteous; in both sexes the hind femora and tibiæ have a broad, blackish ring, and the hind tarsi are blackish at the base and tip. It is very common in meadows.

7. *scambus*, Zetterstedt, is clearly allied to the last, but the male has a row of about six very long solitary black hairs behind the front femora, and a few rather long black hairs beneath the middle femora near the base, the anterior femora are almost all luteous, the hind legs are blacker, the abdominal spots, especially the first pair, are rather larger, and the epistoma has more yellow hairs. I captured it rather commonly at Rannoch last June.
8. *angustatus*, Zetterstedt: this is also very closely allied to *clypeatus*, but is smaller, the abdomen is much narrower, the abdominal spots are larger, the second pair being nearly twice as long as the third pair, while in *clypeatus* they are almost equal, the pubescence on the thorax is less abundant. I have a specimen of this captured near Lewes last June, and another at Darenth in May, 1868, which I had previously confounded with *clypeatus*.
9. *podagratus*, Zetterstedt: also closely allied to *clypeatus*, but the abdominal markings are more obscure, the size is smaller, the front tibiæ are much more dilated at the tip, the anterior femora are more blackish, and the hind legs are all shining black, except just the knees. I captured a few specimens of this at Rannoch last June.
10. *immarginatus*, Zetterstedt: this and *fulviventris* are distinguished from the four preceding by the much greater extension of the pale markings of the abdomen, so that Walker quite correctly says "*abdomine fulvo, linea dorsali media fasciisque angustissimis nigris*:" *immarginatus* has the front femora with about six long solitary black hairs behind (like *scambus*), and also has the hind femora and tibiæ with with broad black rings, and is a small species; I once found it in tolerable abundance on the banks of the Thames, between Kew and Richmond, in August, 1868, but, mistaking it at the time for *clypeatus*, only took a few, and I have never been there at the right time since. I expect Walker's *ferrugineus* var. b includes this.
11. *fulviventris*, Macquart: Walker says of this species—"Rare, in the collection of Entomological Club;" there are two specimens there which I believe belong to this species, but I have never critically examined them; I have never met with the species, but see

no reason why it should not be common in many marshy districts, as I believe it prefers low ground and ditches; it is distinguished by the entirely luteous legs, and extended reddish-yellow abdominal markings, it is also larger than *immarginatus*, and the front femora have a moderate pubescence behind.

Any further addition to our species is hardly to be expected; *rostratus*, of Zetterstedt, might occur in Scotland, it has hitherto been found very rarely in Sweden and Lapland, it is allied to *manicatus*, but is more shining, and the tarsi are not spotted beneath; *latimanus*, of Wahlberg, also from Lapland, resembles *albimanus*, but has only the two basal joints of the front tarsi dilated, and the tibiæ not at all dilated at the tip; *ciliger* and *fasciculatus* of Loew come from the Austrian Alps, and both have the hind tibiæ bent, and with long black hairs on the outside, otherwise being allied to *manicatus*; *parvatus*, of Rondani, from Italy, is allied to *manicatus*, but has all the anterior tarsi yellowish-white; *spatulatus*, of Rondani, also from Italy, seems to come somewhere near *podagratus*; *quadratus*, of Macquart, is probably only *scutatus*, and his *dilatatus* may be only a small *peltatus*; I expect *podagratus* and *scambus* will be found to be widely distributed in Scotland, when that country has been more closely worked, and I think the genus thrives better in northern latitudes, as no European country possesses so many species as Sweden and Norway, and I never saw them so abundant in the south of England as I did at Loch Rannoch.

Denmark Hill: October, 1870.

DESCRIPTIONS OF THREE SPECIES OF *PHYCIDÆ* (FROM BRITAIN) NEW TO SCIENCE.

BY HOWARD VAUGHAN.

TRACHONITIS (?) PRYERELLA, *n. sp.*

♀. Alar expanse 10 to 11½ lines. Stout, thorax broad, abdomen robust, tapering towards the anal extremity. Fore-wings moderate in length, rather broad, costa slightly rounded towards the apex, inner margin nearly straight. Antennæ filiform, pale grey. Head grey. Thorax grey, with the meta-thorax and patagia tipped posteriorly with long dark grey scales. Abdomen pale greyish-white. Fore-wings ground colour, pale greyish-white, shaded towards the base with dark grey. First line, which is undulating and oblique, passing from the inner third of the costa to the middle of the inner margin, shaded with dark grey; this shading continuing in less degree to the second line.

The stigmata indicated by darker grey markings. Second line denticulate, nearly parallel with the hind margin. Sub-terminal line very wavy and faintly visible on the paler ground colour. Hind margin dotted with dark grey. Cilia pale grey.

Hind-wings silky-white, narrowly bordered with fuscous.

I am at present aware of the occurrence of three specimens only. One taken in London, by Mr. Henry Pryer, of Tooley Street, on the 27th August last, a second by myself on the 10th September last, and the other, captured some years ago by Mr. T. Eedles, and in the collection of Mr. Stainton.

I have named this species in honour of Mr. Pryer.

HOMEOSOMA SENECTIONIS, *n. sp.*

Alar expanse, 8 to 9 lines. In general appearance, this species resembles its congeners *nebulella* and *binævella*.

Head, thorax, and abdomen, greyish.

Fore-wings: ground colour shining greyish-white, the inner half being suffused with a warm, fuscous tint. There are no indications of a first line. About the junction of the middle with the inner third, and towards the middle of the wing are two, and in some cases three, dark dashes. At about the junction of the middle with the outer third are two distinct black dots. Beyond these dots is the second line, which affords a most distinctive character to the species; it is straight, and composed of black dots running in a direction oblique to the hind margin. The hind margin is more or less distinctly dotted. Cilia grey, with a faint fuscous tint.

Hind wings shining grey, cilia paler.

From *H. nebulella*, to which this species is nearly allied, it is at once distinguished by its much smaller size. From *H. binævella*, the straightly oblique dotted second line, independently of other characters, readily separates it.

The following careful description of the larva of this species has been kindly forwarded to me by Mr. Buckler:

"I received on June 19th, from Mr. Howard Vaughan, three larvæ "mining in stems of rag-wort (*Senecio jacobæa*), and pushing out little "heaps of frass which are agglomerated together by webs.

"When full-grown, the larva is half-an-inch long, plump, tapering "towards the head, which is a little smaller than the second segment. "Segments well defined, and each (excepting the thoracic) sub-divided "by only one deep wrinkle. The spiracular region a little puffed.

"In colour it is of a deep purplish-brown, the ventral surface slightly tinged with olive; the head and plate on second segment deep blackish-brown and brilliantly polished, the rest of the body rather shining, with a faint violet gloss. The others not quite so mature, were of an olive-greyish tint, with shining black heads and plates—a pinkish gloss being on the back and sides."

The perfect insect occurs in May and July, and the larvæ from which the above description was taken were captured by myself, in Essex, in June.

HOMEOSOMA SAXICOLA, *n. sp.*

Alar expanse 7 to 8 lines. Head, thorax, and abdomen greyish fuscous. The ground colour of the fore-wings grey, with a fuscous tint. The costal stripe bifurcates about the inner third into two other stripes of unequal size, the larger of which is continued along the costa until within a short distance of the apex, and the lesser is continued as a streak to beyond the middle of the wing. There are two or three small black dots situated about the junction of the inner and middle third, and two or three other small dots beyond the middle of the wing. There is seldom any indication of a second line. Cilia of the ground colour. Hind-wings shining-grey, cilia paler.

This species is closely allied to *H. nimbella*.

From *H. senecionis* it is readily distinguished by its smaller size, narrow wings, by the bifurcating costal streak, by the smaller size of the dots, and by the darker ground colour of the fore-wing, and absence of the dotted second line.

The specimens from which the above description is taken were reared in 1867, from larvæ found feeding in flower heads of chamomile (*Anthemis*), in the Isle of Man, in September, 1866.

The larva, as well as I remember, was short, obese and greenish, with darker blotches on the back.

Kentish Town: October, 1870.

ON THE HABITS OF *PLATYPUS CYLINDRUS*, FAB.

BY T. ALGERNON CHAPMAN, M.D.

(Concluded from p. 106.)

The newly-hatched larvæ are not the straight cylindrical creatures that the full-grown larvæ are, but rather flattened and disc-shaped, the lateral region being largely developed and each side carrying two

rows of long stiff bristles, each bristle surmounting a lateral tubercule. As the larva consists of a head and twelve segments, each row consists of eleven bristle-bearing tubercles, the bristles of the anal segment being directed backwards. These bristles are probably of great assistance in locomotion. The young larva, adhering to the damp felty wall of the burrow by its moisture, moves freely along or round it by a wave-like motion, and feeds entirely on the fungus-exudation until it has grown large enough to occupy the whole diameter of the burrow.

The full-grown larva presents corneous points at the same situations as those occupied by the bristles of the young larva. With each change of skin they become shorter, till they are thus only represented in the last skin. I need not describe the full grown larva, which has been figured by both Ratzeburg and Perris, and well described by the latter in the *Annales des Sciences Nat.*, série II, tome 14, p. 89. The only exception I would make to Perris' description is that he describes it as rather thickened beyond the middle, and he so figures it. The larva is really quite cylindrical, when at home in its burrows. Perris does not appear to have met with it plentifully, and to have made his descriptions from specimens removed from the burrows, without noting that soon after removal the larva becomes rather thicker beyond the middle segments, and, instead of continuing straight, becomes curved, and then much resembles that of the other *Xylophaga*. It is extremely muscular, and this change probably results from its contortions not being counteracted by their usual points of resistance, the walls of the galleries.

The larvæ must feed up very rapidly, as I find them full-grown when the burrows can hardly have been made more than a few weeks. I have found no evidence of eggs being laid after the late autumn; and during the winter the burrows contain full-fed larvæ. The parent beetles also live in the burrows all the winter.

During the winter all the inhabitants are nearly dormant, but in autumn and spring much frass is ejected. At first, and before there are any larvæ in the burrow, this is all of the splintery variety; but afterwards it is composed of small pellets of digested wood, almost entirely the excreta of the larvæ. The young larvæ certainly live on the fungus-exudation I have described, until they grow large enough to fill the burrow. The large larvæ must eat considerably, both from the amount of fat they store up and their muscularity. There is also much frass ejected, and these considerations lead me to believe that the full-grown larvæ eat the wood, though I have no proof of it, and I know that they eat the fungus.

I think it is also evident that the various branches of the burrow are increased in length and complexity after the splintering process is finished. In the spring, also, the pupal cavities have to be excavated, and this must certainly be done by the larvæ themselves, both because the parents are frequently dead at this period, and because the amount of excavating during a brief period must be very great, more than the parent beetles could undertake. I believe that the parent beetles die usually in the following April or May, after the larvæ are full-fed, but before the pupal cavities are commenced.

The arrangement of the branches of the burrow is somewhat irregular, usually consisting of a few long straight galleries that are, roughly speaking, parallel to each other; sometimes a branch leaves another near its extremity and returns nearly parallel to it, but they never anastomose. Sometimes they consist of short curved portions continuously dividing dichotomously, making, though not all in the same plane, a curiously regular pattern, something like a branch of mistletoe. The much smaller burrows of *Tomicus dryographus*, the only species we have in this country at all allied in habit to *Platypus*, are divided with much more regularity than those of *Platypus*.

The principal function of the parent beetles after oviposition appears to be the ejection of frass from the open mouth of the gallery, which they alone appear to do. I have seen a small quantity brought every few minutes, at a season when the larvæ were busily feeding. It seems to be done by the male or female beetle indifferently.

I have strong reason to believe that either of these directs the movements of the larvæ in the burrows, not only from the burrows containing eggs and young larvæ being kept undisturbed, but also from larvæ falling out of the burrows from which the parent beetles had been removed, a circumstance that does not otherwise occur.

The pupation cavities or burrows are excavated on either side, or I should rather say on the floor and roof of a straight branch of the burrow, tolerably close together, so that the two sides of a burrow often contain several dozen within a few inches. They are always at right angles to the gallery from which they start, and also parallel to the fibres of the wood, of the same width as the ordinary galleries, and just the length of one beetle. The larvæ, after excavating them, must come out and enter backwards, as the head of the pupa is towards the burrow, and the larva is unable to turn round in it. It is shut off from the gallery by a slender partition of frass, which looks as if it had got there by being pushed out of the way by passers by; and it is

difficult to see how it could be placed there in any other way, though, as it in reality completes the cocoon of the larva within, it is hard to believe that its presence is accidental.

I had usually found the pupation cavities placed vertically, *i. e.* one set above the burrow, the inhabitants of which must be head downwards, the other set below the burrow, the inhabitants of which must have the head upwards; and it occurred to me, in connection with certain theories as to the sexes of bees, to investigate whether the different position had any influence on the sex of their inhabitants. Accordingly, I provided myself for the purpose with a fine log occupied by *Platypus*, but found, somewhat to my disappointment, all the pupation cavities horizontal, that being the direction of the fibres of the wood in the log. The beetles were, I need hardly say, placed indifferently as regards the sexes. I tried to investigate the matter in a suitable stump, but was not successful in finding many beetles ready to emerge; the few I found, however, did not favour any theory in the matter, but I was enabled to determine that the line of the fibres of the wood and not the line of gravity determined the direction of the pupation cavities. This must be of use in preventing the cavities of contiguous burrows from interfering with each other.

When the beetle emerges, it soon leaves the burrow, and either forms a fresh burrow in the stump, or takes wing to a fresh locality. Those I had in captivity appeared to prefer the sunshine for their flight. It is only by taking them before they have left the burrows in which they were reared that they are to be captured in perfect condition.

The beetles are able to make a very audible squeak, by rubbing the abdomen rapidly against the elytra. When a log containing a number of burrows is shaken, the beetles burrowing within it answer with quite a chorus of squeaking, in order to hear which, the ear must be placed near the wood.

I have never met with *Colyidium elongatum*, the parasite of *Platypus*. The only parasite I have seen is a small white *Acarus*, a full-grown individual of which, until its legs are detected, extremely resembles in size, colour, and outline, the egg of *Platypus*, on which its eggs are laid, three or four sometimes adhering to the egg of the beetle. I believe it extracts nutriment from the larva of the beetle, though without doing it much injury.

Occurrence in Britain of Aleochara maculata (C. Brisout).—I have had for some years a specimen of an *Aleochara*, captured by myself in the shingle by the banks of the Lyn, in north Devon, which puzzled me very much. This was taken by Mr. Crotch to Paris last spring, and has been returned named by M. Ch. Brisout as the species described by him in Grenier's *Cat. des Col. de France et Matériaux*, &c., 25, p. 18, under the name *maculata*. It is there compared to *bisignata*, Er., a species I believe we have not as yet found in Britain; and is not unlike *cuniculorum*, Ktz., but is larger, with longer and stouter antennæ, shorter legs (the middle tarsi especially being shorter) and darker femora. It is, moreover, more sparsely clothed with a golden pubescence, and the abdomen is less closely punctured. In size and colour of the elytra, it is like a large example of *A. nitida*, from which, of course, the absence of the double series of thoracic punctures at once distinguishes it.—H. S. GORHAM, Bearsted, October 13th, 1870.

[M. Brisout's species above recorded as British has been erroneously attributed by German Coleopterists as a synonym to *A. cuniculorum*, Ktz. (*bisignata*, Wat. Cat., nec Er.); from which, as is evident from Mr. Gorham's observations, and as I have also been long ago assured by M. Fauvel, it is abundantly distinct.—E. C. R.]

Note on Homalota algæ, Hardy.—Mr. Crotch in 1866 proposed to retain Mr. Hardy's name for one of the two species of *Homalota* included by him under it. In this I fully concur: indeed, I think it must be adopted as a matter of right. Not only does he most accurately describe the dark insect, as noticed by Dr. Sharp, but his description, as will be seen below, was published a year previous to that of *H. puncticeps*, Thomson. That Hardy should have appended another species as a variety does not, in my opinion, matter one whit; were it otherwise, many names now recognised would not stand.

The following are the dates, &c., of publication referring to this insect.—
HOMALOTA ALGÆ, Hardy, Trans. Tyneside Nat. Field Club, ii, 78 (1851).

H. puncticeps, Thoms., Öfv. Vet. Ac. Förh., 1852, p. 133; D. Sharp, Rev. Brit. Hom., Trans. Ent. Soc. Lond., 1869, p. 140.

I may add, that the date of 1852 on the title page of the separate copies of our Catalogue of the *Coleoptera* of Northumberland and Durham was a printer's blunder; it should have been 1846—1852, as its publication in our Club's Transactions began in 1846, was continued in 1851, and concluded in 1852.—THOS. JNO. BOLD, Long Benton, Newcastle-on-Tyne, September 23rd, 1870.

Note on British locality for Baridius scolopaceus.—In my communication referring to this species at p. 107 of the present vol., I inadvertently wrote "South" for "Kentish" coast.—G. C. CHAMPION, 274, Walworth Road, S., 6th October, 1870.

Captures of Coleoptera during the past season.—At Whitstable, Kent, I have found *Ceuthorrhynchus frontalis*, Bris., in quantity on *Artemisia maritima*, in June, unaccompanied by *C. troglodytes* (this will, I think, go far towards establishing the specific value of the insect). *Mordellistena pusilla* also occurred on the same plant, but rarely; *Lymnæum* sparingly, in a salt marsh; *Phytæcia cylindrica* and *Malachius marginellus* by sweeping; *Homalota puncticeps* (abundantly), *H. imbecilla* (rarely), *Heterothops binotatus* (in abundance), *Philonthus sericeus* and *Aleochara grisea* in decaying sea-weed, and *Donacia menyanthidis*, commonly, on reeds.

On the coast, near Portsmouth, in May, I found *Phytosus spinifer* and *nigri-ventris*? in some numbers (the latter being the commoner) in the sand under a swathe of sea-weed, in a somewhat similar manner to that recorded by Mr. T. J. Bold, in this Magazine. They are very difficult to detect, owing to their sluggish habits, and appear to go down some distance in the sand in dull weather, coming to the top when fine. *Hyperaspis* also occurred with them.

Whilst staying at Soham, Cambridgeshire, in July last, I endeavoured to investigate the *Coleoptera* of that district, but failed to meet with any but ordinary species, such as *Oödes*, commonly, in a marshy place, accompanied, sparingly, by *Panagæus cruz-major* and *Philonthus fumarius*, *Haliplus mucronatus* (three or four specimens), *H. variegatus* (rarely), *H. affinis* (commonly), and *Hydræna testacea* in the ditches.

Three or four visits to Wicken fen produced a few better things; but, owing to the exceedingly dry season, beetles were very scarce. The following species, amongst others, occurred to me in the fen:—*Anthocomus sanguinolentus*, in abundance, on flowers; *Telephorus thoracicus*, rarely; *Phyllotreta sinuata*, two specimens (but lost one); *Apion vicinum*, *Crepidodera salicariæ* and *atropæ*, *Aphthona hilaris* and *Thyamis castanea*, by sweeping; *Chrysomela menthastri*, locally abundant on low plants; *Cassida equestris* and *vibex*; *Lina populi*, common on poplar; *Sphærius acaroides*, *Thinobius brevipennis* and *Homalota luteipes*, on the wet peat; *Carabus arvensis*, *Ilyobates nigricollis*, *Stenus nitens*, *palustris* and *fuscipes*, and *Scydmænus hirticollis*, in damp places; *Pseudopsis*, *Corticaria ferruginea*, and *Atomaria gutta*, in haystack refuse; and *Orectochilus* and *Ilybius fenestratus* in the ditches. I also took five specimens of *Colan brunneum* out of a tuft of grass in a wet place.

I have also taken *Anisoxya fuscula*, in some numbers, by beating dead branches at Darenth Wood; *Telephorus unicolor* and *Aphodius Zenkeri* at Sevenoaks; *Heterothops 4-punctulus* at Croydon, in haystack refuse; *Megapenthes tibialis* and *Anobium denticolle* in solid wood of oak, at Richmond Park; *Ceuthorhynchus biguttatus*, in some numbers, at roots of horn-poppy, *Masoreus*, *Platynaspis* and *Diglossa mersa* at Southend; and *Harpalus servus*, *H. cordatus*, *Cassida hemispherica* and the unicolorous var. of *C. sanguinolenta*, and *Laccophilus variegatus* (in abundance) at Deal.—Id.

Captures at Deal from 22nd to 30th September.—With but few exceptions, insects had lived their appointed time, or had gone into winter quarters, and had to be unearthed if they were to be obtained. And such a scene as was developed of the mortal remains of those who had perished in or after the struggle for existence! It was like working in catacombs, or reviewing the havoc that a hexapod Moltke and Napoleon had wrought among their legions. For every living insect there were hundreds of dead ones in all stages of dismemberment. The great hiding places are under the moss which grows all over the sand hills, at the roots of the Marram grass.

COLEOPTERA.—There was the usual run of Deal *Geodephaga*, &c.; the best things I got were *Masoreus Wetterhalii*, scarce; *Sarrotrium clavicorne*, scarce, and difficult to see among the *débris* of the moss, &c., as they did not move; *Saprinus rotundatus*, scarce; *Helops pallidus*.

HEMIPTERA.—*Odontoseclis fuliginosus*, larvæ; *Sciocoris terreus*, plentiful under the short, dry moss, at the top of the hillocks. I got 50 or 60, and then left off taking them. When first shaken out of the moss they lie quite still for about five minutes, then give themselves a shake, and move no more for a long time, and, being just the colour of the sand, are not easy to see. The sexes were in equal numbers. *Eurygaster maurus*, one only. I did not find the difficulty in fixing the legs mentioned in Vol. vi, p. 183, probably because I let my example remain in laurel for a week. *Pseudophlæus Fulleni*, one only. Usually common in August under *Erodium cicutarium*, but the roots of this plant were very small, and had nothing about them. *Chorosoma Schillingi*, a few, mostly mutilated. Of one example, one of the thighs had been broken, the ends at the fractured place had slightly overlapped and grown together; this thigh is therefore shorter than the other, as might have been expected, but the tibia and tarsus are also both shortened. *Neides depressus*, one only; *Trapezonotus agrestis*, very abundant, the bug of the period; *Rhyparochromus pretertatus*, common; *Agramma lata*, common; *Deltocephalus sabulicola*, among the Marram.

LEPIDOPTERA.—*Aporophila australis*, five, sitting on the ground, without an attempt at concealment, and very conspicuous among the short grass. The want of "mimicry" was painfully apparent in the remains of many specimens lying about the sand-hills, the said remains consisting only of the thoracic segments and wings, the abdomen, in each instance, having doubtless formed a *bonne bouche* for one of the thousands of starlings which frequent the place. Yet, as the species is evidently not rare, the "survival of the fittest" to carry on the race is surely determined by a rough and ready process, in which the welfare of the birds, rather than of the insects, seems to have the first place.—J. W. DOUGLAS, Lee, October 7th, 1870.

Capture in Britain of Plusia acuta, Walker.—I have to announce the capture in May last by my friend, Mr. H. P. Robinson, of Tonbridge Wells, of a specimen of *Plusia acuta*, Walk., which entered his drawing-room window, no doubt attracted by the light. On looking over Mr. Robinson's captures in June last, I immediately detected the insect as something new. I am indebted to my friend Mr. Howard Vaughan for its name.—HENRY MOORE, 8, Sheffield Terrace, Kensington, W., 15th October, 1870.

[This species, which is not mentioned in either of Guenée's Catalogues, is represented in the Brit. Mus. Collection by a single specimen, from Congo, in Africa. Mr. Moore's example was no doubt imported in the pupa state.—Eds.]

Occurrence in Britain of Acidalia ochrata, Scop., a species new to our list.—A short time since, Mr. Walter Weston placed in my hands for identification an *Acidalia* captured by himself near Red Hill, Surrey, on August 4th, 1869, and subsequently Mr. Sydney Webb, of Red Hill, has shown me a specimen of the same species which he also had captured in the previously mentioned locality in 1865. This *Acidalia* is, in my opinion, the true *ochrata* of Scopoli. Dr. Knaggs informs me that he has long looked upon this species as an inhabitant of Britain, and some time ago kindly gave me an example which, to judge by the setting, is undoubtedly British, although he was unable to furnish me with the locality in which it had been captured.—HOWARD VAUGHAN, Gaisford Street, Kentish Town, 8th October, 1870.

Capture of Vanessa Antiopa in Suffolk.—A specimen of this rarity has been taken at Little Glemham, Suffolk, by a son of the Rev. R. King, the rector of that parish.—E. N. BLOOMFIELD, Guestling, October, 1870.

Deilephila livornica at Glanville's Wootton.—We have taken a fine dark specimen of this insect from a scarlet geranium near the house.—J. C. DALE, Glanville's Wootton, Sherborne, 12th October, 1870.

Deilephila livornica at Perthshire.—A specimen of this rarity has been caught by a girl near Bridge of Earn, during the past season.—F. BUCHANAN WHITE, Perth, October, 1870.

Deilephila galii at Helston.—I yesterday evening saw in my garden at this place a specimen of this rare insect, hovering over white verbena; and, after watching it for some time, I knocked it down with my hat, and secured it for a time, but it recovered itself and flew away.—HENRY ANSTAY, St. Wendron Vicarage, Helston, August 27th, 1870.

Deilephila galii in Fifeshire.—The perfect insect was taken on 7th August at Kinghorn, Fifeshire, and sent to me; this induced me to look for the larvæ, and, in a locality half-way between Glassmount and Kinghorn Loch, I found three in September, two of which have since spun up, and on October 3rd I took a fourth, which is still feeding.

I notice that these Fifeshire larvæ confine themselves to *Galium verum*, whereas those I had at Deal would eat *Galium elatum* (*mollugo*) equally well.—J. BOSWELL SYME, Kirkcaldy, 8th October, 1870.

Notes on Sphinx convolvuli.—By the kind permission of Mr. J. Boswell Syme, I am enabled to give the following dates of the capture and rearing of the larva of *Sphinx convolvuli* in this country.

Mr. Syme had three nearly full-grown larvæ brought to him on the 7th September, 1859; they went down on 12th and 13th of the same month, two of them becoming perfect pupæ; from one of which the imago, a female, emerged (as far as Mr. Syme can recollect) about the end of May, 1860.

The larvæ were found at Upper Deal, in a potato field, and fed on *Convolvulus arvensis*, but would also eat *C. sepium*; whilst in confinement they certainly did not hide or bury themselves by day, but fed away continuously. The moth contained undeveloped ova, about the size of poppy-seeds.

All the above particulars agree fairly well with my own observations on this species at p. 100, Vol. v, of this Magazine, except the date of the appearance of the moth; Mr. D'Orville and myself came to the conclusion that August and September are the months in which it should be looked for here, whereas the date given above is nearly three months earlier: confinement must have had something to do with it, but Mr. Syme tells me the pupa was not forced, except by being kept in a room without a fire in it.—J. HELLINS, Exeter, October 12th, 1870.

Captures of several examples of Leucania albipuncta.—Since my last notice, Mr. S. Webb and I have captured several other specimens of *Leucania albipuncta* at sugar, during our stay at Folkestone. We also took examples of *Heliothis marginata* and *peltiger*.—HOWARD VAUGHAN, Gaisford Street, Kentish Town, 13th October, 1870.

Capture of Xylina Zinckenii at Darenth.—On the 2nd inst., I took a fine specimen of *Xylina Zinckenii* at rest on a sugared tree in Darenth Wood.—J. MOORE, Willow Place, Stamford Hill, 6th October, 1870.

Cirrhædia xerampelina at Manchester.—I bred a specimen of this species on the 4th and another on the 9th of August, from larvæ taken here. I think the species is unrecorded as occurring in this neighbourhood.—C. CAMPBELL, 14, Blackburn Street, Hulme, Manchester, 10th October, 1870.

Tapinostola elymi at Cleethorpes.—Being at Cleethorpes about the middle of July, I went to look for *T. elymi*, and of course found it at home, though, owing to my being rather late, the specimens were not all so fine as could be desired.—ID.

Captures of Lepidoptera near Perth in 1870.—Several species not before found in the county or in the district have been taken in this neighbourhood during the past season. First in importance are three species new to the county lists—*Deilephila livornica* (above recorded), and *Noctua depuncta* and *Heliothis marginata*, taken by Mr. Marshall near Stanley. *N. depuncta*, was, I believe, common. Among other captures are *Chesias obliquaria* by Messrs. Marshall and Herd, *Dasydia obscurata* in abundance by Mr. Herd, *Cirrhædia xerampelina* by Messrs. Herd and Stewart and Sir Thomas Moncrieffe, *Aplecta occulta* by Messrs. Stewart and Marshall, and *tincta* by Mr. Herd,—neither species having been taken in the district before. New to the district also are *Orthosia suspecta*, taken by Mr. Stewart, and *Cloantha solidaginis*, taken by Messrs. Jamieson (on Kinnoull Hill), and by Mr. Marshall (at Dunkeld). This species seems widely distributed, but never common in Scotland. It is perhaps worth notice that Mr. Herd has bred *Ennychia cingularis*, *Phycis subornatella*, and *Sciaphila Penziana* from moss. Probably in some, if not in all these cases, the larvæ had not fed on the moss, but only spun up in it. Mr. Marshall, whose capture of the larvæ of *Deilephila galii* I recorded in a previous number, has been fortunate enough to find twenty larvæ this season. F. BUCHANAN WHITE, Perth, 11th October, 1870.

Notes on captures of Noctuidæ in Morayshire in 1870.—Upon the whole I think the season just past has been a very satisfactory one. It was, moreover, very early, for many species occurred fully a fortnight or three weeks before their customary time. In the month of April I paid several visits to the Altyre Woods, and saw many *Endromis versicolora*. Later on, *Lasiocampa rubi* was taken on the wing, and, in autumn, its larvæ swarmed on the moss. Many insects abundant in former years were very scarce this season, or altogether absent. Thus, the genus *Agrotis* was very poorly represented, and such species as *A. tritici* and *nigricans*, which, in 1869, occurred in vast profusion, were both rare. For the first time, I this year tried sugaring the trees on the banks of the Findhorn, and five or six species were taken that had not occurred to me at Cluny Hill; the distance between these places is hardly beyond a mile, thus proving the necessity of more than one collector working a limited district. The higher parts of the country with elevated moss and much natural birch-timber have not been explored, and are a *terra incognita* to the entomologist. Then again, the magnificent forests of Darnaway and Altyre, if carefully worked, would yield many insects new to the district.

Thyatira batis appeared 21st June, not uncommonly at sugar. *Cymatophora duplaris*, 29th June, excessively numerous at sugar. *Acronycta psi*, 4th June, common at sugar and at rest; *ligustri*, 20th June, frequent at sugar; *rumicis*, 26th May, abundant at sugar. *Leucania conigera*, 6th July, very abundant at sugar, and varying much; *lithargyria*, 29th June, swarming at sugar, and also varying much; *pallens*, 28th June, swarming at sugar and ragwort; *impura*, not uncommon at sugar. *Hydræcia nictitans*, 30th July, swarming at sugar, and occasionally on ragwort by day; *micæa*, 30th July, not uncommon at sugar and on ragwort. *Xylophasia rurea*, 30th May, frequent at sugar and at rest; *polyodon*, 7th June, swarming at sugar, the black forms being, as usual, the earlier. *Charæas graminis*, 3rd August, rare at sugar and ragwort, apparently periodical in its appearance, abounding in vast profusion in 1869. *Cerigo Cytherea*, 5th August, a few specimens at a birch-tree infested with *Cossus*. *Luperina testacea*, 6th August, abundant, flying over grassy slopes and also at sugar. *Mamestra abjecta*, 18th July, rare, at rest; *anceps*, 15th June, frequent at sugar; *furva*, 6th July, occasionally at sugar; *brassicæ*, 12th June, frequent at sugar and at rest. *Apamea basilinea*, 7th June, as the last; *gemina*, not uncommon at sugar; *fibrosa*, 3rd August, three specimens at sugar, its food-plant not found in this district; *oculea*, 28th June, very abundant at sugar—varying as usual. *Miana strigilis*, 13th July, frequent at sugar; *faciuncula*, 9th June, swarming at sugar and ragwort; *literosa*, 4th August, at sugar, but not so abundantly as usual. *Caradrina alsines*, 6th July, at sugar, new to this locality; *blanda*, 14th July, plentiful at sugar; *cubicularis*, 30th May, very frequent at sugar and at rest. *Rusina tenebrosa*, 7th June, very common at sugar. *Agrotis valligera*, 1st August, not uncommon at sugar and at *Cossus*-birch, bred also from larvæ from the Culbin sands; *suffusa*, 26th August, plentiful at sugar; *segetum*, 18th June, at sugar; *exclamationis*, 10th June, frequent at sugar; *corticea*, 17th June, not uncommon at sugar and at rest; *niricans*, 30th July, not uncommon at sugar; *tritici*, 31st July, at sugar, much less common than usual; *agathina*, 30th August, not so frequent as, and later than, last season, although the larvæ swarmed in the heather; *porphyrea*, 15th June, as usual, very abundant; *præcox*, 27th May, larvæ on Culbin sands; I took fifty in half-an-hour from just beneath the sand on conical hillocks covered with a dense growth of *Salix repens*. I made sure of getting the pupæ later on, but dug for hours unsuccessfully; surely the larvæ must change at some distance from their food-plant. *Tryphæna janthina*, 2nd July, abundant at sugar; *fimbria*, 15th July, in great abundance at sugar, even up to 28th September; *subsequa*, 5th August, ten specimens, and these mostly in poor condition, more than half taken from a *Cossus*-birch; I failed in obtaining eggs for Mr. Buckler; *orbana*, 24th June, swarming at sugar; the black and red variety in great abundance; this was fortunate, as I secured several batches of eggs for Mr. Doubleday and other friends; some seem to doubt that this form is the same species, a point which will probably soon be cleared up; *pronuba*, 29th June, abundant at sugar. *Noctua glareosa*, 20th August, in great profusion at sugar; *depuncta*, 19th July, in abundance at sugar, as many as fifteen in one round; *augur*, 29th June, abundant at sugar, and variable; *plecta*, 1st June, frequent at sugar; *C-nigrum*, 15th June, very abundant at sugar; *triangulum*, 7th July, several at sugar; *brunnea*, 20th June, bred, frequent at sugar; *festiva*, 29th June, abundant at

sugar; *conflua*, 28th June, in profusion at sugar; *Dahlia*, 2nd August, swarming at sugar; *rubi*, 22nd June, very common at sugar and ragwort; *umbrosa*, 14th July, swarming at sugar and ragwort, secured eggs for Mr. Buckler; *baja*, 7th July, abundant at sugar, varying much; one specimen in cop. with *Leucania pallens* (see page 88); *neglecta*, 17th August, abundant at sugar and heather-bloom; *xanthographa*, 21st July, as usual, swarming at sugar and ragwort. *Trachea piniperda*, 3rd April, larvæ, also swarming at sallows; in the pine-woods it flew so thickly that I have often had half-a-dozen in the net at once; many grey and green varieties which are probably same as var. A. of Guenée from Lapland and Sweden. *Taniocampa gothica*, 30th March, swarming at sallows; *rubricosa*, 16th April, not unfrequent at sallows; *instabilis*, 2nd April, common at sallows; *stabilis*, 8th April, swarming at sallows. *Orthosia suspecta*, 10th August, one at sugar, new to this county; *macilenta*, 13th September, common at sugar. *Anchocelis rufina*, 29th August, swarming at sugar and varying much; *litura*, 20th August, in vast profusion at sugar. *Cerastis vaccinii*, 13th September, abundant at sugar. *Scopelosoma satellitia*, 7th September, as usual, very abundant at sugar. *Xanthia cerago*, 30th July, abundant at sugar, also the var. *flavescens*; *flavago*, 1st September, several at sugar; *ferruginea*, 8th August, swarming at sugar, varying much in size. *Euperia fulvago*, 23rd August, not common at sugar. *Cosmia trapezina*, 5th August, frequent at sugar. *Dianthæcia capsicola*, 21st June, not uncommon over *Lychnis vespertina*. *Polia chi*, 18th August, at sugar and at rest, but not so abundant as usual. *Epunda nigra*, 18th August, swarming as usual at sugar, and occasionally at rest. *Miseli oryacanthæ*, 17th September, plentiful at sugar. *Agriopsis aprilina*, 29th August, abundant at sugar, surely very early. *Phlogophora meticulosa*, 6th October, frequent at sugar. *Euplexia lucipara*, 18th June, frequent at sugar, Califer Hill. *Aplecta nebulosa*, 4th July, several at sugar. *Hadena adusta*, 20th May, frequent at sugar and at rest; *protea*, 8th August, swarming at sugar and at rest, unusually early; *glauca*, 29th May, rare at rest; *dentina*, 8th June, abundant at rest and at sugar; *oleracea*, 10th June, abundant at sugar; *pisi*, 16th June, at rest; *thalassina*, 6th June, frequent at sugar; *contigua*, 1st July, at sugar, new to this locality; *rectilinea*, 15th June, several at sugar on the Califer Hill, new to this locality. *Calocampa vetusta*, 22nd August, in far greater profusion than usual at sugar, this species always appears here in advance of the next; *exoleta*, 7th September, swarming as usual at sugar, as many as ten on one tree. *Heliothis marginata*, 1st July, one at sugar, new to this locality. *Anarta myrtilli*, 25th May, frequent, flying about, and settling upon, the flowers of *Cardamine pratensis*. *Brephos parthenias*, 4th April, in profusion among the birches in Altyre forest; *notha*, 9th April, not uncommon with the last. *Plusia v-aureum*, 6th July, a few specimens flying; *gamma*, 18th July, scarce this year; *interrogationis*, 13th August, one specimen knocked down when I was shooting at Lentrán, near Inverness. *Amphipyra tragopogonis*, 3rd August, abundant at rest and at sugar. *Mania typica*, 29th June, very abundant at sugar on the banks of the Findhorn; I never saw the insect at Cluny Hill, although not more than a mile distant. *Stilbia anomala*, 8th August, occasionally flying, and at sugar. *Phytometra ænea*, 26th May, frequent over heather.—GEO. NORMAN, Cluny Hill, Forres, October 8th, 1870.

On the treatment of the hibernating larva of Bombyx rubi.—Like your correspondent, Mr. J. Hamilton (E. M. M., p. 110), and I believe the majority of entomologists, I have failed in my attempts to rear the larvæ of *Bombyx rubi*. Mr. A. Pickard, of Wolsingham, near Darlington, however, rears the species successfully, and his *modus operandi*, which I obtained in a letter from him dated September 9th, 1870, is as follows:—he fills a flower-pot half full of moss, into which, about the end of October, the larvæ are placed. The pot is then put in a corner of the garden, covered over with muslin, and over that he fastens a piece of cardboard to keep it from too much rain. A few plum leaves are put in the pot occasionally so long as they last; but when examined, the larvæ are almost always down amongst the moss. The principal thing appears to be, to let the larvæ be exposed to all weathers except the heavy rains. The pot was frequently covered with snow, but, the moss not getting wet, the larvæ took no harm.

This is the substance of Mr. Pickard's remarks on the subject; any entomologist wishing for further information, will, I doubt not, readily obtain it, on applying to that gentleman.

I have found no difficulty in rearing many hibernating larvæ. I always endeavour to keep a bit of green leaf (or withered, if not too dry, and the proper food so long as possible) in the breeding cage, for them to "nibble" any sunny day during the winter months. A large number of species, *Callimorpha dominula*, and many, perhaps all, of the *Acidalie*, for instance, I suspect could not be kept without this precaution, though it is not necessary for such species as *Liparis salicis*, which spend the winter in little silken cocoons.—GEO. T. PORRITT, Huddersfield, October 4th, 1870.

Variety of Chelonia caja.—I have now on one of my setting boards a very curious variety of *Chelonia caja*, which was bred last month from a second brood, by Master Samuel Bairstow of this town. The dark chocolate colour occupies the whole of the fore-wings, there being only a faint trace of the usual white markings; the hind-wings are black, edged on the inner margin with brick-red, the spots of course being obliterated. The specimen is a male, and, like most dark varieties in this species, is rather crippled; this fact being to my mind one strong point of evidence in favour of the theory, that disease is to a great extent the cause of variation in *Lepidoptera*.—ID.

Food-plants of Eupithecia campanulata.—About a month since a friend wrote to me begging that I would send him a few larvæ of *Eupithecia campanulata*. I was much occupied at the time, and could not well manage to walk to the woods, rather more than a mile distant, where I have been in the habit of taking this larva on the seed-pods of *Campanula trachelium*; so I turned out into the garden, where, amongst a collection of herbaceous plants, I have various species of *Campanula* growing. In a short time I found the larva of this *Eupithecia* on the following species:—*Campanula persicæfolia*, *media*, *latifolia*, *collina*, *patula*, *carpatica*, *rapunculus*, *rapunculoides*, *urticæfolia*, and *Phyteuma campanuloides*. I gather from this that we may expect to find the larva of this moth on most (if not all) of the British *Campanule*.—H. HARPUR CREWE, The Rectory, Drayton-Beauchamp, Tring, September 19th, 1870.

A correction concerning the genus Phytoptus.—In the condensed report of the Proc. of the Ent. Soc. of London, on the 4th July, 1870 (ante p. 67), I am said to have suggested, that various forms of *Acari*, for which Professor Westwood then proposed the new generic name of "*Acarellus*," were identical with those described by "Dejean" under the name of *Phytoptus*.

I have indeed a recollection that I did say "Dejean," but I desire to mention that this was an obvious error of utterance for "Dujardin," as, of course, it is well known that the energetic Count Dejean, who made his horsemen collect beetles during the lull of reconnoitings and fights, never published any papers but on his favourite order *Coleoptera*.

Besides, as bearing on the knowledge of the genus *Phytoptus*, I find a note by my esteemed correspondent M. Lichtenstein, of Montpellier, in the "Bulletin de la Soc. Ent. de France, 4me sér., Vol. 10, pg. 1," in which this gentleman incidentally mentions, that the *Phytoptus* foreseen by Réaumur (Vol. iii, mém. 12), has been named by Turpin and Latreille *Sarcoptes gallarum tilie*, and has been well described by Dujardin in the *Annales des Sci. Nat.*, 1851, pg. 166. — ALBERT MÜLLER, South Norwood, S.E., September 17th, 1870.

Review.

VERZEICHNISS DER SCHMETTERLINGE DER UMGEGEND VON HALLE AN DER SAALE.
By A. STANGE. Leipzig: E. Kummer, 1869.

Halle, where Germar lived, must, to any entomologist, be a sort of sacred ground. The author of the present Catalogue of the *Lepidoptera* in the neighbourhood of Halle, is now no more.

The Catalogue we have before us is very carefully written, and shows considerable powers of observation; and we have no doubt that it will furnish many a useful hint to British Entomologists.

It must be a matter of regret to us that Herr Stange, from whom much might have been expected, should have died so young (he was only in his 35th year); his unpretending little work of 108 pages teems with notes of interest to all engaged in working out the histories of our *Lepidoptera*.

At p. 35, we are informed that the larvæ of *Trachea atriplicis* strayed by thousands from a field of oats across a road, occupying a space of twenty paces in width, and being thirty-six hours in transit. Amongst them were many larvæ of *Spilosoma menthastri*, which eagerly sucked up the juices of such larvæ of *atriplicis* as were trodden on. The cause of this migration was altogether inexplicable, as there was no lack of food amongst the oats which they quitted.

The rare *Mussehliana* may soon be an inmate of all our cabinets, if we bear in mind that it was "once bred abundantly from the seeds of *Butomus umbellatus*." Of *Ochsenheimeria vacculella* we read—"one year this occurred on the windows of a house in innumerable quantities; since then only singly, at the same place." How this insect finds its way into houses, is at present one of the most perplexing problems of the Micro-Lepidopterist.

Of *Ecophora Schæfferella* we read—"in May and June all about, on the trunks of old trees, especially willows and poplars, but always singly."

ON THE OCCURRENCE OF THE NEUROPTEROUS GENUS *SIALIS*
IN CHILI.

BY R. M'LACHLAN, F.L.S.

It has long been known that the Chilean insect-fauna includes several genera otherwise peculiar to the temperate portions of the northern hemisphere, but which put in an appearance in that country, though absent in the intervening regions. It would perhaps be wrong to say that the forms are absolutely identical, but the differences are so slight as to render it unnecessary to separate them generically. Another link in the chain of resemblances has just occurred to me. In a collection of Chilean insects sent home by Mr. Read, is a *Sialis*, which, though differing somewhat in facies from the northern forms, may yet be retained in the genus. It should, however, be noted that a species has been already described from Cuba, so that the evidence is not quite of the same weight as that afforded by some other genera. I propose to describe Mr. Read's insect as—

SIALIS CHILENSIS, n. sp.

S. fusco-nigra; capite rufescente, fusco-nebuloso. Prothorax angustè transversus. Abdominis lamina ventralis in processum lanceolatum producta. Alæ fumatæ: anticæ elongatæ, angustatæ, obtusæ; venis paullo elevatis, nigris; areâ costali angustatâ, vix dilatatâ: posticæ anticis paullo latiores. ♂.

Long. corp. 7 mill.; exp. alar. 29 mill.

Head reddish, an impressed median longitudinal line reaching the hind margin, joining a sinuate line in front before the antennæ; frontal portion, and a large space on each side of the median line suffused with fuscous, a fuscous spot on each side below the eyes; labrum truncate in front, testaceous; antennæ and palpi black, the former very slender; eyes larger and much more prominent than in the other species of the genus. *Thorax*: prothorax blackish-fuscous, very narrow, forming a transverse parallelogram; meso- and meta-thorax blackish-fuscous; the whole thorax with a very short pubescence. *Legs* blackish-fuscous, with short pubescence; lobes of the fourth tarsal joints beneath, and the claws, testaceous. *Abdomen* black; ventral lamina commencing as a broad triangular base, the apex being drawn out into an acute lanceolate process curved over the apex of the abdomen (appendices not definable in the dried insect).

Wings uniformly smoky, somewhat shining, the membrane with very short black hairs; in each wing there is a pale space below the junction of the radius to the costal margin; veins comparatively fine, little elevated, black. *Anterior wings* long and narrow, the apex longly elliptical; costal area narrow, very slightly dilated, with about seven nervules; upper branch of the sector simply furcate at its end (like the lower); an oblique line of three transverse nervules before the apex; discal nervules few: *posterior wings* slightly broader than the anterior; the sub-costa and radius conspicuously black; transverse nervules few in number.

Differs considerably from northern species in the form of the anterior wings, which resemble those of *Perla*, whereas they are ordinarily short, broad, and obtusely angular, with a strongly dilated costal area, and strong and elevated veins; also in the extremely narrow prothorax, generally delicate appearance, and larger eyes.

As a contribution to a knowledge of the distribution of the genus, I may here note that Baron De Selys Longchamps possesses one male *Sialis* from Japan, identical with, or closely allied to, *S. lutaria*.

Lewisham: 12th November, 1870.

ON CERTAIN BRITISH HEMIPTERA-HOMOPTERA.

(Revision of the Family *Cixiidae*).

BY JOHN SCOTT.

(Continued from page 123).

B.

- 1.—*Marginal nerve* with two or three of the granules, at irregular intervals, generally united.

Species 2.—*CIXIUS NERVOSUS*.

Cicada nervosa, Linn., S. N., ii, 709, 25 (1767); Fab., Ent. Sys., iv, 442, 64 (1794).

Cicada cunicularia, Linn., S. N., 465, 44 (1767).

Flata nervosa, Fab., Sys. Rhyn., 54, 47 (1803); Germ. Mag., iii, 191, 5 (1818); Fall., Hem. Suec., ii, 71, 1 (1826); Germ., Thon Archiv., ii, 48, 27 (1829).

Cixia nervosa, Burm., Handb., ii, 157, 2 (1835).

Cixius nervosus, H. Schf., D. I., 112, 22; Zett., Ins. Lapp., 304, 1 (1840); Am. et Serv., Hem., 508, 1 (1843); Marshall, Ent. Mo. Mag., i, 154, 1 (1864); Kirschb., Cicad., 46, 2 (1868).

Elytra without a band before the apex, the first nerve at the base, as far as the bifurcation, brown or black, transverse nerves black, the space between them and the apex with several more or less distinct pale fuscous or brownish patches.

Head black, margins and middle keel yellow; *forehead* piceous, margins yellow. *Face* black, keels yellow, clypeus yellow, apex on each side of the middle keel black. *Antennæ* brown or yellow.

Thorax: *pronotum* yellow, the portion beneath the eyes and the disc behind the side keels, more or less broadly black. *Scutellum* black, middle keel, and

sometimes the apex of the side keels, clear brown, or frequently all the three keels brown. *Elytra*: marginal nerve fuscous or yellowish, inner nerves pale yellow, granules black, of an elongate shape, deposited irregularly, two or three occasionally confluent where the transverse band passes across, and also at the bifurcations of the nerves, each granule bearing a short black hair; from the transverse nerves to the apex the granules on all the nerves are frequently confluent, so that the nerves appear black, transverse nerves black, margined on one or both sides with fuscous-brown; *clavus*, marginal nerve next the apex with six or seven granules, or the granules confluent, and forming two short streaks. *Wings* pale, transparent, or more or less fuscous, marginal and inner nerves black, bases of all yellow. *Legs* yellowish or fuscous; *thighs* next the apex frequently dark brown; *tibiae* sometimes with a blackish patch at the base, on the outside; *tarsi*, 1st and 2nd pairs brownish-yellow or fuscous, 3rd joint black, 3rd pair yellowish, 3rd joint sometimes brown.

Abdomen black, margins of the segments on the sides very narrowly orange-reddish; *genital segment* black, or occasionally chestnut-brown; "claspers" fuscous.

Length, 3—3½ lines.

This is our commonest species, and is to be met with everywhere, by beating trees and bushes, from June to September.

Species 3.—*CIXIUS INTERMEDIUS*.

Cixius intermedius, Fieb. (M.S.).

Head and *face* yellow, or pale brownish-yellow; *pronotum* pale chestnut-brown, darker on the sides. *Elytra*: marginal granules somewhat square. *Genital organs* pale brownish or yellowish.

Head: *Face*, lower portion next the clypeus, with a more or less axe-shaped pitchy patch on each side of the middle keel. *Antennæ* black, apex of the 2nd joint brown.

Thorax: *pronotum* yellow. *Scutellum* clear brown, darkest on the sides from beyond the side keels, apex depressed, and very finely wrinkled transversely. *Elytra* somewhat of a chalky or milky hue, or with a slight brownish shade, anterior marginal nerve yellowish-white as far as the cuneate patch, from thence round the apex fuscous, granules along the marginal nerve somewhat square, and placed at different intervals in different individuals, granules on the inner nerves of a somewhat loose appearance, somewhat thickly disposed, and placed more or less in pairs, one granule on the right hand side of the nerve, and the other on the left, each granule bearing a short black hair; transverse band generally of an almost uniform width, more or less dark brown, and more or less distinct, it curves slightly outwardly, and reaches the inner margin nearly in the middle of the clavus, transverse nerves very narrowly black. *Wings* pale, transparent, nerves black. *Legs* yellow; *thighs* of all the pairs fuscous-brown; *tibiae* sometimes with a fuscous shade.

Abdomen black, margins of the segments on the sides slightly reddish or yellowish; *genital segment* brown; "claspers," &c., yellowish. Length, 2½—3 lines.

Smaller than *nervosus*, to which it is related. The different arrangement of the granules on the nerves, the shape of those along the anterior margin, and the colour and form of the genitalia are the most conspicuous characters whereby to separate them.

Possibly this insect may be found in collections under the name of *nervosus*. At present I only know of a few examples, four taken by Mr. Bold, at Gosforth, near Newcastle-on-Tyne, a ♂ taken by Mr. Edward Saunders, at Penzance, and two others by Mr. Douglas, at Hirst Wood, Tunbridge Wells.

Time of appearance, August and September.

Species 4.—*CIXIUS BRACHYCRANUS*.

Cixius brachycranus, Fieb. (M.S.).

Elytra : marginal granules not square or elongate.

Head : crown and face brown, the latter darkest towards and at the apex, all the keels paler. *Antennæ* black.

Thorax : *pronotum* clear brown, shining, middle keel continued to the apex, which last is depressed and wrinkled transversely, extreme apex and side margins yellowish. *Elytra* faintly yellowish, transparent, marginal nerve yellowish as far as the cuneate patch, from thence round the apex fuscous; inner nerves fine, pale yellowish, all the granules minute, black, placed moderately closely together, and generally in pairs, slightly inclined from left to right towards the apex, transverse nerves fuscous, with a narrow margin of the same colour, inner margin of the fuscous cuneate patch with three or four granules; transverse band brown, narrow, more or less distinct, commencing on the anterior margin about midway between the base and the cuneate patch, and terminating a little beyond the middle of the inner margin of the clavus, along which are a few remote granules, larger than those on the corium. *Wings* pale, transparent, nerves fuscous, except at the base, where they are yellowish. *Legs* yellow; *thighs* more or less fuscous.

Abdomen black; *genital segment* pitchy-brown; "claspers," &c., yellowish.

Length, $2\frac{1}{2}$ lines.

A smaller insect than *intermedius*, with the marginal granules, as well as those along the nerves of the elytra, more minute. The "claspers," however, are very similar in each, and, until I have seen more specimens, I admit that I am somewhat sceptical as to its distinctness.

I have made the description from a single ♂ example taken by Mr. T. J. Bold, at Gosforth, near Newcastle-on-Tyne, in September.

(To be continued).

Occurrence near Cirencester of a species of Melœ new to Britain.—Last month, I took here a single specimen of a *Melœ* not agreeing in my opinion with any recorded British species, and which Dr. Sharp, to whom I have sent it, states to be certainly new to our list. When at Oxford last week, I was enabled, by Professor Westwood's assistance, to compare this insect with the various species of *Melœ* in the Oxford Museum, of which it seems to agree best with *M. decorus*, Brandt, Er.,—stated to be the same as *M. pygmæus*, Redt., by Gemminger and v. Harold (*pygmæus* of Mus. Oxon., however, does not quite agree with my insect).

Of our known species, it comes nearest to *M. rugosus*; and is small (4 or 5 lines long), of a very dark blackish-blue colour; with very transverse thorax, which has three longitudinal grooves; a large head and filiform antennæ. The thorax is peculiar, and similar to that of the type of *decorus*, but differs from that of *pygmæus* in Mus. Oxon.—W. R. McNAB, Royal Agricultural College, Cirencester, November, 1870.

Note on the occurrence in Britain of Trachyphlœus myrmecophilus, Seidlitz (*Die Otiorhynch. s. str.*, 1868, p. 124; *Berl. Ent. Zeitschr.*, 12 Jahrg., Beiheft), with observations on a second British species of *Cathormiocerus*, and on the value of that genus.—When examining some *Trachyphlœi* recently sent to me by Mr. H. Moncreaff, of Southsea (whose continuous captures of most interesting *Coleoptera* in that neighbourhood put to shame the voluminous Catalogue of trivialities, professing to be exhaustive of its beetle-fauna, published some few years ago in the "Zoologist"), I detected a single example of a species which seems to me to accord very satisfactorily with the above recorded insect, recently described from the Escorial. The wide difference in the localities is not of much account, seeing that we have certainly two British species of *Cathormiocerus* (the second also owing to Mr. Moncreaff, and upon which I propose to make a few observations), and that Mr. Moncreaff's captures of *Oxygnathus cuspidatus*, *Philonthus cicatricosus*, &c., have prepared us for almost anything truly European. The only discrepancy that occurred to me between the description of *T. myrmecophilus* and Mr. Moncreaff's specimen was in the size, which, according to Seidlitz, should be slightly less than that of *T. squamulatus*,—the reverse being here the case. But Seidlitz does not seem to have had many examples before him; and I find a very considerable difference in size occurs in the Southsea insects (Mr. Moncreaff, on my drawing his attention to the novelty of his species as British, immediately hunted for and succeeded in capturing several more specimens, near Lumps pond, Southsea Beach), the smallest of which is smaller than average *squamulatus*, whilst the largest is rather larger than any *aristatus* that I have seen.

Seidlitz states his insect to be not unlike his *Cathormiocerus Chevrolati* (with which the second British species of *Cathormiocerus*, above alluded to, has many characters in common, being also not unlike the *Trachyphlœus* now recorded), and also points out its resemblance to the Madeiran *C. curvipes* of Wollaston, from which the uncurved scape of its antennæ seems chiefly to distinguish it, in spite of the two species being supposed to belong to different genera. Mr. Wollaston has kindly sent to me for examination several of his *C. curvipes*, and I find that the autumnal fresh and slightly tessellated examples of the *Trachyphlœus* taken by Mr. Moncreaff are extremely like that species,—differing from it, however, as mentioned by Seidlitz.

Mr. Moncreaff's insect agrees with Seidlitz's *myrmecophilus* in being as it were intermediate between *T. aristatus* and *T. squamulatus*, differing, however, structurally from both. It has the stout, clubbed, elytral setæ of *aristatus* (though they are not quite so pronounced), but its thorax is not so wide, and its elytra are more elongate, not being so inclined to globose-oval. The second segment of its abdomen, moreover, is divided from the first by an arched suture, and is longer than the 3rd and 4th segments together; whereas in *aristatus* the second segment is divided from the first by a straight line, and is scarcely so long as the 3rd and 4th segments together,—the segmental divisions, also, being stronger. From *squamulatus* it recedes in its much stouter and more evident elytral setæ, its larger eyes, laterally more rounded and bristly thorax, rather longer second abdominal segment, and less horizontal antennal furrow or "scrobs," which is directed at first rather upwards and then down towards the eye, and has its upper margin not so sharply defined.

The second British species of *Cathormiocerus* above mentioned (of which I have seen some five or six specimens, taken by Mr. Moncreaff at different parts of the north-east side of the island of Portsea, from moss, roots of plantain, grass, &c., and for a fine example of which I am much indebted to that gentleman) was originally brought before my notice by Mr. G. R. Crotch, who submitted it to me for comparison with my type of *C. socius* from Sandown, and who has subsequently sent it to Dr. Seidlitz for determination. I have, therefore, thought that a few notes on the differences between the two insects may not be uninteresting; especially as the Portsea species does not satisfactorily accord with any in Seidlitz's monograph. Compared with my *socius*, it is flatter, shorter, broader and darker, with the punctures of the striæ of the elytra larger and rounder, the thorax broader, with its sides more suddenly and strongly widened before the middle, and the rostrum more equally broad (the antennal furrows not being so approximated), with its longitudinal furrow not so conspicuous, being, indeed, scarcely perceptible; the scape of the antennæ is thicker and shorter, not so angularly dilated at the base on the side next the eye, but more so on the outer side; the joints of the funiculus are much shorter and stouter; the elytral setæ are shorter, finer, and nearly black instead of yellowish; and the clothing of scales is not so bright or variegated. The antennal furrows form broad grooves, deep at the base, slightly curved downwards towards the eyes, where they are shallowest and smooth, and with their upper margin the most distinct and reaching to the upper fore margin of the eye. When viewed from above or from the front, these grooves are not so open as in my *socius*, in which insect the whole furrow is more directed upwards, with its lower margin the most distinct, being elevated and curved upwards until it merges with the upper margin considerably in front of the eye: this upper margin has a small abrupt and angular process (entirely wanting in the Portsea species) just before the point of junction of the two margins, and the whole furrow forms a pit-like enclosure for the accurate reception of the dilated base of the scape. The space between the back of this pit and the eye is not smooth and shining (as in the corresponding portion in Mr. Moncreaff's insect), but, though slightly depressed for the reception of the shaft of the scape, has the longitudinal roughnesses of the head continued over it.

In all the specimens of Mr. Moncreaff's insect that I have recently examined the scape of the antennæ is equally dilated at the base, the joints of the funiculus are equally stout and short, and the claws of the anterior legs are not connate; so that, unless all are of the same sex, none of the recorded sexual differences of *Cathormiocerus* are exhibited. Those differences appear to be of a somewhat promiscuous nature, as an excess of development in the antennæ is apparently common to both sexes, the funiculus being sometimes much thicker in the ♀, and the scape dilated or curved (or both) in the ♂; sometimes, also, the ♀ has the tarsi of the four anterior legs with free claws, whilst they are connate in the ♂; and sometimes no sexual discrepancy is evident. It seems very doubtful, however, from Seidlitz's observations, whether in certain species the thickened scape be really indicative of the ♂ only.

I fully expect that future Entomologists will consider *Cathormiocerus* as not generically separable from *Trachyphlæus*. After stating that individual forms of the two come very near each other, the only reliable distinguishing character that Seidlitz can establish for the former is that its under-side is clothed with shining, granuliform, connate (and therefore not to be abraded) scales, instead of simple dull scales as in the latter. This strictly superficial character is, indeed, evident when such insects as *C. curvipes* and *T. scaber* are compared; but *T. squamulatus*, *alternans* and *aristatus*, as far as my experience goes, do not possess the scaling supposed to be peculiar to *Trachyphlæus*, being, at the very least, intermediate in that respect between *T. scaber* and the shining, granulated under-surface of *Cathormiocerus*; whilst the insect above recorded as *T. myrmecophilus* is scarcely, if at all, distinguishable as to its abdominal surface from *Cathormiocerus*,—as, indeed, might almost have been inferred from Seidlitz's observations, whose evidently accurate eye compels him more than once to assimilate that species with others of the supposed different genus. Apart from this, it seems unreasonable to consider differences in the opacity or density of scales or granulations as worthy of affording generic characters. *Eirrhinus æthiops* and *E. bimaculatus*, *Strophosomus limbatus* and *S. coryli*, *Apion astragali* and *A. malvæ*, *Phyllobius viridicollis* and *P. uniformis*, *Otiorhynchus atroapterus* or *O. rugifrons* and *O. septentrionis*, with other *Curculionidæ*, at once suggest themselves as instances of congeners widely differing in such a superficial way. The extreme development of the antennæ in some *Cathormioceri* (accompanied by peculiarities in the antennal furrows), being mostly, if not entirely, sexual, and not being found in all the species, deserves no particular stress as a generic character, and is quite equalled by the peculiar structure of the tibiæ in some *Trachyphlæi*. Seidlitz, indeed, does not urge this point, and even acknowledges that in *C. lapidicola*, Chev. (for which, in spite of its being one of the most *outré* species, Brisout's genus *Schaumius* is rejected by him), the unusual dilatation of the hind tibiæ is a reproduction of the structure found in the first group of *Trachyphlæus*. When we remember that even *C. socius* was disbelieved as British, it seems not improbable that an erroneous supposition as to the species of *Cathormiocerus* being restricted to the countries of the Mediterranean may have hitherto contributed not a little to the idea that those species were generically distinct from *Trachyphlæus*.—E. C. RYE, 10, Lower Park Fields, Putney, S.W., November, 1870.

Note on a species of Ptenidium new to the British list.—In 1869, M. Bonvouloir published in Ann. Soc. Ent. Fr., 4^e sér., ix, p. 412, descriptions of two new species of *Trichopterygia* discovered by M. Wankowicz in Lithuania, and named by him *Ptilium modestum* and *Ptilium intermedium*, and through the kind exertions of Mr. Crotch, I have lately had an opportunity of examining the type specimens of both these species. The former, *P. modestum*, is very closely allied to *P. myrmecophilum*, but differs from that insect in sculpture, form and size, sufficiently, I think, to warrant its separation. It has not to my knowledge been found in Britain.

The latter, *P. intermedium*, represents a form which I had some years ago separated from *P. evanescens* (*apicale*, Erichs.), but subsequently had replaced in that species as a variety. My reason for doing this was that I had seen only one specimen, which was not thoroughly mature; and, moreover, the points of difference which it presented, viz., a less tumid thorax, and deeper punctuation, were such as often result from the drying of an imperfectly matured insect. But, now that other specimens, all bearing the same distinctive characters, have occurred, both in this country, and also on the continent, there cannot, I think, be a doubt that M. Wankowicz has done right in dividing this form from *evanescens*.

Since, however, it is possible that some entomologist may follow the bad example of Gillmeister and again include all the species of this group under one generic appellation, I propose to avoid the repetition of "*intermedia*," Gillm., by calling this species, after its captor, "*Vankoviezii*."

The characters by which it may be known from *P. evanescens* are these:—the thorax is less tumid both on the upper surface and the sides; the usual foveæ at its base are much more distinctly marked; the punctuation, both on the thorax and elytra, is deeper and more distinct; and the colour is throughout of a more rufous tint.—A. MATTHEWS, Gumley, Market Harborough, October, 1870.

Note on Ptenidium intermedium, Wankowicz.—Among some *Coleoptera* recently sent for determination by me to Mr. Rye, was a single example of a *Ptenidium*, which that gentleman informed me was certainly new to our list, and which our great master of these little creatures, to whom he sent it, refers to M. Wankowicz's insect above recorded. I found the species near Scarborough, underneath rotten birch bark, in the months of March and April.—THOMAS WILKINSON, 6, Cliff Bridge Terrace, Scarborough, October, 1870.

Observations on Homalium Heerii.—The specimen so named in my collection and given to me by my friend the Rev. Thomas Blackburn, who introduced the species to our lists on the authority of it and of other examples taken by himself at Rannoch, in July, 1866 (E. M. M., Vol. iii, p. 93), is certainly not specifically separable from the much vexed *H. vile*, Er., of which it appears to be either a light-coloured variety or an immature individual,—probably the former. I may observe, also, that, at a recent meeting of the Entomological Club, Dr. Power remarked to the same effect as regards his own British exponents of *H. Heerii*. M. Fauvel, when recently engaged on the *Brachelytra*, was glad to avail himself of a sight of my specimen above mentioned, which, sent as *H. Heerii*, was returned by him to me without comment. It seems not improbable that these Scotch insects really represent *Heerii*; which, in that case, would of course have to sink as a synonym of *H. vile*.—E. C. RYE, 10, Lower Park Fields, Putney.

Observations on Homalium brevicorne, Er., and H. gracilicorne, Fairm.—Among some *Coleoptera* recently sent to me for examination by my friend Mr. T. J. Bold, I find some examples of an insect (taken recently by Mr. J. Hardy, at Wooler, in fungus on alders) which I am convinced is the *Homalium brevicorne* of Erichson,—already included in our lists, though doubt has been thrown by M. Fauvel as to its being truly British. When fully mature, as are Mr. Bold's specimens (sub-cortical species are well known to remain frequently for an unusually long time of a pallid colour), it resembles *H. monilicorne*, with which alone Erichson compares it, his trivial name for the species being thus intelligible; but it is considerably smaller, with more strongly and closely punctured thorax and elytra (the former of which is less transverse), and more transverse joints to the apical half of the antennæ, and without the two deep foveæ at the base of the head. It is more closely allied to the recently added *H. gracilicorne*, Fairm., but is larger, especially broader, darker, with the usual dorsal thoracic foveæ (or, rather, a shallow central depression towards the base, having a slight medial elevation), the thorax less rounded at the sides and more contracted behind, the apical joints of the antennæ more transverse, and the punctuation of the elytra closer, being almost rugulose in places.

To *H. brevicorne* must, in my opinion, also be referred two specimens of an insect mentioned in my record of *H. gracilicorne*, (Ent. Ann., p. 88) as taken by Dr. Power, at Balmuto, in Fifeshire, and which, compared with Mr. Bold's specimens, are slightly immature; these, kindly given to me by Dr. Power himself, were named *gracilicorne* for me by M. Fauvel, evidently in error, as the close punctuation of their elytra, and their possession of evident thoracic depressions, remove them from that species. My London-district specimen, referred to in the same place, which has also been corroborated by M. Brisout, the original detector of Fairmaire's species, is unquestionably true *gracilicorne*, and is the only British example that I have seen. It is rather larger than *H. vile*, much lighter in color, with stronger and not so close punctuation on the thorax, the sides of which are more rounded and which has no dorsal depressions, and with the punctuation of the elytra coarser and not so close,—not forming occasional striæ.

Kraatz (Ins. Deutschl., ii, 993, note) rightly considers *H. brevicorne* as more nearly allied to *H. vile* than to *monilicorne*, and to be separable from *vile* by its strong punctuation (also by its larger size, more robust and broader build, more shining thorax and stouter antennæ, and by the punctuation of its elytra being more confused, and not forming occasional striæ); nevertheless, the superficial resemblance between large and fully mature specimens of it and *H. monilicorne* is considerable.

Mr. Matthews, as mentioned in Ent. Ann., 1870, demurs to M. Fauvel's opinion that his *brevicorne* is *vile*, var., as he has never hitherto parted with the possession of it, and M. Fauvel can, therefore, have had no means of forming a correct opinion.—ID.

Note on Trogophlæus foveolatus, Sahlb.—Among some Coleopterous enigmas propounded to me by the indefatigable Dr. Power, I find three examples of this species, which, with the exception of the pair in Mr. G. R. Waterhouse's collection, are all that have hitherto come under my observation as British, out of the large number of *Brachelytra* from all parts of the country that have from time to time been sent to me for examination.

Compared with its ally, *T. corticinus*, this species is shorter, small and proportionately broader, of a deeper black colour (the legs being deep black with yellowish points), with shorter antennæ, four more evident thoracic foveæ and coarser punctuation on the elytra. Its larger size, and broader and flatter build, and the thoracic foveæ and much stronger elytral punctuation, distinguish it from *T. halophilus*, Kies., which resembles it in some respects.—Id.

Note on food-plant of Cryptocephalus Wasastjernii.—Mannerheim (Bull. Mosc., xvii, p. 176, 1864), in a paper of the highest interest to a collector (seeing that he gives careful details of sifting, &c.), states that *Cryptocephalus Wasastjernii* lives on *Carduus heterophyllus*, in shady places. G. R. CROUCH, University Library, Cambridge, November, 1870.

[Dr. Power has, during the past summer, taken this species at Woodbastwick, near Horning.—E. C. R.].

Notes on Portsea Coleoptera.—*Dyschirius angustatus*; a few specimens taken in a broad ditch at Hayling Island, by washing sand in winter and early spring (E. M. M., vi, p. 213). *Drypta emarginata*; occurs in some numbers at roots of *Anthoxanthum odoratum*, in March and April, in roads to Alverstoke. *Zabrus gibbus*; abundant in July, off the stones near parade ground, Portsmouth. *Trechus lapidosus*; Hayling Island, near the ferry, in April. *Lymnæum nigropiceum*; Southsea Beach, spring. *Tachys bistriatus*; Cumberland Fort, behind Coast-Guard Station, out of moss. *Oryzophilus cuspidatus*; abundant in the Canal near Milton, April to September. *Hydroporus unistriatus*; one specimen at the Salterns, and two out of the Canal, May. *Anisotoma ciliaris*; one near the Cumberland Fort, in August. *Syncalypta setigera* and *Copris lunaris*; Hayling, May. *Aphodius porcus*; Southsea beach. *Homalopia ruricola*; once, from black-thorn, Portsdown Hill, May. *Lucanus cervus*; common, on the wing in June, mostly under elm-trees. *Trachys nanus*; Southwick. *Throscus obtusus*; Great Salterns, Portsea. *Hedobia imperialis*; bred from larvæ found in dried bramble sticks, February. *Ptinus lichenum*; out of old basket in cellar. *Baridius lepidii*; moss, Cumberland fort. *Phytobius Waltoni* and *Litodactylus leucogaster*; Canal, moss, in the spring. *Ceuthorhynchus constrictus*; on *Alliaria officinalis*, never from *Sisymbrium*, June. *C. verrucatus*; abundant at Hayling, among dead leaves, under *Glaucium luteum*. *Gymnetron noctis*; larva feeds on unripe seeds of *Linaria vulgaris*. *Tychius Schneideri*; Whitham hill, June. *T. squamulatus*; Cumberland Fort, Southsea. *Sibynia sodalis*; very abundant on flowers of sea-thrift, at the side of Cumberland fort, in June. *S. arenaria*; Lumps, near Southsea. *S. primitus*; Portsdown Hill. *Magdalinus cerasi*; on elm, rarely, at Polwell, in June. *Apion confluent*; from horned-poppy, Hayling, in October (perhaps only connected with that plant for shelter). *A. limonii*; rare on *Statice limonium*; in July and August, the high tides drowning it. *Bagöus lutulosus*; rare, in holes in the sand near Lumps pond. *B. laticollis*; abundant in moss, Canal, May. *B. incertus*; near Lumps pond, Canal, and Salterns, not common. *Mecinus circulatus*; under *Plantago coronopus*, most likely from galls on that plant. *Eriirhinus pillumus*; flower-heads of *Matricaria*, May and June. *Hyllobius abietis*; commonly, on flower-heads of thistles, in cop., on the lines of Lumps fort, close to

the sea-shore ; there are no trees of any kind within a mile, and not thirty fir-trees altogether in this part of the island. *Liosomus ovatulus* occurs near Lumps fort in July, and a smaller species, perhaps distinct, is found further inland. *Orthochates setiger* ; on *Senecio Jacobæa*, in cop., in April, and to be found abundantly in autumn and winter among the dead leaves of that plant, in sandy places at Hayling, near the ferry. *Cænopsis Waltoni* ; rare, Salterns. *Tanymecus palliatus* ; abundant on thistles, in June and July, Southsea beach. *Sitomus Waterhousei*, rare, Southsea beach. *Brachytarsus scabrosus* ; one, dug out of a dead furze branch. *Bruchus loti* ; from *Vicia cracca* and *Helianthemum vulgare*, Portsdown, June—August. *B. villosus* ; from *Sarothamnus scoparius*, July and August. *Hylurgus pilosus* ; Hill-head, Gosport. *Stenostola ferrea* ; from hazel, Southwick, June. *Gracilia pygmæa* ; bred abundantly from black-thorn and bramble. *Donacia thalassina* ; abundant in June, Canal. *Crioceris asparagi* ; one on Southsea beach. *Chrysomela göttingensis* ; scarce, Portsdown hill, on bed-straw. *C. hæmoptera* ; by thousands, on short grass, Cumberland fort, October. *Thyamis dorsalis* ; very abundant on rag-wort, Lumps pond. *T. absinthii* ; abundant on wormwood, June. *T. verbasci*, var. *thapsi* ; Portsdown, from *Verbascum*. *T. agilis*, Rye ; from *Mentha aquatica*. *Psylliodes marcida* ; abundant on Southsea beach, spring and summer, in old cabbage stumps. *Lycoperdina bovisæ* ; bred from puff-ball at Southwick, in August. *Phaleria cadaverina* ; plentiful under sea-weed, Southsea beach, June. *Scaphidema ænea* ; under whitethorn bark. *Helops cæruleus* ; old posts round the fortifications, out in June. *Ischnomera melanura* ; very abundant in old stakes on the beach, near Cumberland fort. *Lytta vesicatoria* ; one taken at Portsdown hill, last May. *Homalota imbecilla* ; in great abundance in pond refuse, Lumps, April and May. *Philonthus varius*, var. *bimaculatus* ; walls round Portsmouth, not in company with type form. *P. cicatricosus* ; under stones and seaweed, Southsea beach, June to October, very rare. *Bledius spectabilis* ; Lumps pond. *Corylophus sublævipennis* ; one specimen, on the Common.—H. MONCREAFF, 9, Wish Street, Southsea, November, 1870.

Captures of Coleoptera near Maidstone.—During the past season (since May 7th) I have taken the following species, amongst others of more general distribution, in this neighbourhood ; indeed, I think all were found within a radius of two miles from my house, which will include a district of both chalk and sand, wood and marsh.

Dromius 4-signatus, *Badister humeralis*, *Calathus flavipes* and *C. fuscus* ; *Bembidium bistriatum*, *B. obliquum*, *B. lampros*, var. *velox*, Er., *B. Sturmii* and *B. 4-pustulatum* (already recorded in the present vol.) ; *Haliplus elevatus*, abundant in running water with *Emis Volkmani* ; *Aleochara cuniculorum*, *Quedius cruentus*, black var. with red suture, *Q. peltatus*, *Philonthus albipes*, *P. umbratilis* and *P. quisquiliarius*, var. *rubidus* ; *Stilicis geniculatus* and *S. orbiculatus* ; *Stenus incrasatus*, *S. plantaris*, and *S. picipennis* ; *Habrocerus*, *Deleaster dichrous*, *Homalium striatum*, *Eusphalerum triviale*, *Mycetoporus lucidus*, *Bledius subterraneus*, and *B. longulus* ; *Colon serripes*, *Hydnobius strigosus*, *Cyrtusa minuta*, *Colenis dentipes*, *Saprinus virescens*, *Cercus pedicularius*, abundant on *Spiræa*, *Brachypterus gravidus* on *Linaria*, *Liemophlæus bimaculatus* and *L. duplicatus*, *Litargus*, *Oömorphus*, *Heterocerus marginatus* and *H. lævigatus*, *Parnus auriculatus*, *Rhagonycha unicolor*,

Clerus formicarius, *Dryophilus anobioides*, *Mordella fasciata* (local, on *Umbelliferae*, July, and flying in the hot sun), *Mordellistena abdominalis*, *M. humeralis*, and *M. brevicauda*.—HENRY S. GORHAM, Bearsted, November 12th, 1870.

Notes on Meligethes.—The undermentioned species of *Meligethes* (besides the universal *M. rufipes*, *aneus*, *viridescens* and *picipes*) have come under my notice at Bearsted, as occurring on the flowers named. *M. lumbaris*, on roses in my garden; *M. seniculus*, in the utmost profusion on *Cynoglossum* and *Echium*; *M. flavipes*, low plants; *M. lugubris*, plant not observed; *M. distinctus*, on *Teucrium scorodonia*; *M. solidus*, on *Helianthemum*; *M. brunneicornis*, I think on Honeysuckle.

Mr. Garneys, of Repton, tells me that *M. memnonius* occurs with him on *Caltha palustris*.—ID.

Capture of Opilus mollis and Callidium variabile at "Sugar."—While sugaring for moths near Lee in July last, I was surprised to find on two or three occasions several specimens of the former and one or two of the latter beetle at my bait; and I have thought that this might interest Coleopterists, as I have never noticed a record of the capture of either of these species under similar circumstances.

In Mr. Rye's book on British Beetles, I observe that he says the larva of *Opilus mollis* lives under the bark of willows, and feeds on the larvæ of *Anobium*, &c. The trees on which the above occurred were old oaks, upon which trees it seems probable that these larvæ were reared.—JOHN FAIRBAIRN SCOTT, 37, Manor Park, Lee, S.E., November, 1860.

Descriptions of two species of Hemiptera new to the British lists, and notice of a third.—

Plociomerus luridus, H.-Schff., Wz. Ins., 1, 4, p. 11, fig. 356.

Head dark brown. Antennæ clothed with long hairs, 1st joint brown, lighter at the apex, 2nd and 3rd reddish, suffused with brown, near their apices, 4th brown. Thorax dark red-brown, covered with a velvety pubescence, hinder angles and base lighter, very much contracted a little behind the middle, the sides, in front of the contraction, much rounded, so as to give a swollen appearance to the anterior part of the thorax, posterior angles largely rounded, base nearly straight. Scutellum dark brown, pubescent like the thorax. Elytra: clavus piceous, with three rows of dark punctures, the two inner ones uniting; corium piceous, with rows of dark punctures, covered with short, whitish hairs, suffused with dark brown near the apex; membrane dusky, nerves white. Beneath brown, covered with a silky pubescence. Legs dark testaceous, each with a wide darker band near the apex, armed with two long, and three short, teeth, the short ones placed one at each end, and one in the middle. Length, 6 millim.

I have two British specimens of this species, taken by Mr. G. R. Crotch in the New Forest.

Hadrodema pinastri, Fall., Hem., p. 112, 68.

Head and antennæ orange-yellow, the latter with a narrow ring of a slightly darker colour on their first joints, and becoming darker as they approach their apices: eyes black: forehead with a brown longitudinal vitta. Thorax not so brightly coloured as the head, callosities dark brown, sides much diverging to the posterior angles in nearly straight lines, angles and base rounded, surface largely

punctured, covered with short brownish hairs: scutellum the same colour as the head, punctured. Elytra deep ochreous-yellow, darker at the apex of the corium and cuneus, punctured, covered with fine brownish hairs; membrane dusky, with a lighter spot below the cuneus. Legs orange-yellow; femora spotted with brown at the apex in the fore and middle legs, and with two narrow reddish bands on the posterior pair; tibiæ generally with two reddish bands on each; tarsi with their apical joints brown, beneath orange-yellow.

♀ lighter in colour, the callosities of the thorax scarcely marked with brown, and the elytra almost concolorous throughout. Length, 5 millim.

For the discovery of this species, which also adds a new genus to the British list, we are indebted to Dr. Power, who found it in some abundance near Weybridge. I have subsequently taken it pretty commonly in two localities near Reigate; it lives on the Scotch fir.

Salda arenicola, Scholtz.

I have recently taken several specimens of this species, which is another addition to our fauna, on the moist parts of the cliffs to the east of Bournemouth. I do not describe it, as I understand Messrs. Douglas and Scott have already a description drawn out from a single specimen obtained elsewhere, and which I hope will soon be published.—EDWARD SAUNDERS, Hillfield, Reigate, 10th November, 1870.

Capture of Lamproplax Sharpi, D. & S. (♀ *Megalonotus piceus*, Flor), in the south of England.—In a marshy place near Wimbledon, when hunting for *Coleoptera* at the end of last September, I captured a specimen of a Drymoid bug, the facies of which was quite unknown to me. This insect my friend Mr. Scott tells me is *Lamproplax Sharpi*, hitherto only recorded from Dumfries-shire, where three specimens of it were taken by the gentleman after whom it was named.—E. C. RYE, 10, Lower Park Fields, Putney, November, 1870.

Stenocephalus agilis in South Wales.—I went out last Thursday, the 13th inst., to look for *Hemiptera* for the first time, and had the pleasure of finding *Stenocephalus agilis* so common at the roots of mat-grass on the sand-hills here, that I captured over a dozen in half-an-hour: it seemed to be more attached to the grass than to spurge, as it was scarce at roots of the latter; I also took one *Therapha hyoscyami* and some common *Hemiptera*, but I looked in vain for *S. neglectus*. I shall be glad to give *S. agilis* to any collector of *Hemiptera* who may want it.—EDWIN ROPER CURZON, Shortlands, Newton Bridgend, August 15th, 1870.

Andricus inflator, Hartig, occurring in Britain.—Of the Cynipideous genus *Andricus*, the Rev. T. A. Marshall has described three British species in Vol. iv of this Magazine (p. 101, 102), namely, *A. trilineatus*, *noduli*, and *moniliatus*, to which I have added a fourth, *A. curvator* (ante p. 39). In reference to the last, my friend Mr. Kidd desires me to state, that he does not wish to designate its gall as "kidney-shaped," but simply as the "kidney-gall," and I feel certain nobody will object to this simplifying of the term.

A fifth species, which I can now confidently record as British, is *Andricus inflator*, Hartig, the gall of which has been figured by Malpighi, in his "Opera omnia," tab. 12, fig. 40, i. and n., whilst Hartig has described the imago in "Germar's Zeitschrift," Vol. ii, p. 191, as follows:—"A. inflator: niger; antennis

"pedibusque pallidis, coxis posticis basi nigris; abdomine lateribus rufo. Capite thoraceque coriaceis, scutello rotundato exarato, abdomine valde compresso, segmento primo longitudine vix dimidii abdominis; vaginæ elongatæ. Long. lin. 1."

An isolated stunted oak-bush, overshadowed by some firs and growing near the top of Shirley-heath, afforded to me, about a fortnight ago, a series of the very characteristic cauline gall of this species. The production consists of a club-shaped swelling of the terminal shoot. The leading bud is completely destroyed, and in its place there appears a central burrow, open at the top, and about three lines in depth, at the bottom of which cavity the small egg-shaped, brown, monothalamous gall is found, imbedded in the wood. It is a matter of pathological interest to observe how effectually the disposition of the Cynipideous egg in the exact spot where the terminal bud ought to have appeared, does, so to say, cork up the starting power of that part, and how the diverted rising sap, though showing vital action in lateral buds on the outer sides of the club, never closes up the central straight funnel, which is the only means of exit for the *Andricus*, after piercing the dome-shaped top of its oviform cell.—ALBERT MÜLLER, South Norwood, S.E., November 7th, 1870.

Deilephila galii and *livornica* near Plymouth.—Mr. John Purdue, who resides in the neighbourhood of Plymouth, has kindly informed me that during the past season he captured one specimen of *galii*, and six of *livornica*, hovering over flowers of *Petunia* and *Verbena*.—J. HELLINS, Exeter, 11th November, 1870.

Eupithecia togata in Perthshire.—A short time ago Mr. Wilson, of Woolwich, brought me to name a few *Lepidoptera* collected during the first half of July on Lord Kinnoull's Estate, in Perthshire; among other species I noticed a series of *Eupithecia togata*. He informed me that he obtained them in a plantation of fir, by beating the lichen which grew on the trees in great luxuriance. I think the occurrence of this rare "pug" in that locality deserves recording.—A. H. JONES, Eltham, October, 1870.

Luperina cespitis at Eltham.—On the 20th September I discovered on a gas-lamp in Eltham a fine example of *Luperina cespitis*. I believe it is somewhat unusual for this species to occur so near the metropolis.—ID.

Eupithecia consignata and other *Lepidoptera* at Norwich.—On May 26th last, I had the pleasure for the first time of capturing a specimen of *Eupithecia consignata*. It was sitting quietly on a gas-lamp, and served in some degree to console me for my disappointment in not again taking *Hydrilla palustris*, for which I worked night after night. Two nights later, while on the same quest, *Cucullia chamomillæ* turned up, quite new to this neighbourhood I believe.

Later in the season I found a specimen of *Acidalia rubricata* in another lamp, in which it had inconsiderately burnt its wings. This little beauty has also been taken at a lamp about a mile from this spot, and a very dark variety of it on a heath about eight miles away. It therefore appears to be widely distributed on this side of the country.—CHAS. G. BARRETT, Norwich, 13th October, 1870.

Notes on the habits and food-plant of Eupæcilia Degreyana.—One night last May I was examining the gas-lamps in the outskirts of the city with much care and

little success, when a narrow-looking little *Tortrix*, upon one of them, attracted my attention. Of course it was soon secured (though not without "swarming"), and as, by the uncertain glimpse which I obtained, it appeared to be *Eupæcilia ciliella*, I was very well pleased to find two more at the next lamp. When, however, they came to be pinned, I found, to my surprise and delight, that instead of *ciliella* I had secured *Eupæcilia Degreyana*.

As will readily be supposed, the first opportunity that occurred, took me to the favoured spot to search for the haunt of the species. On one side of the road were market gardens—unpromising localities,—on the other, gentlemen's houses and shrubberies, but just by the two lamps was a small piece of rough grass land, which seemed to have been formerly in cultivation, and still grew as much of weeds as grass. Here then was the only hope; so, getting leave from the proprietor, I went to work, and before very long secured my first specimen of the insect I had come to seek. It was, however, very scarce, and required long and careful working for, and it was some hours before I had secured a decent series. This was at last facilitated by the approach of dusk, when the *Eupæciliæ* fly. Earlier in the day they often prefer being walked over.

At the same time I feel sure that I discovered its food-plant, for every specimen was among *Plantago lanceolata*, and would settle on nothing else. The favourite perch was across a flower-stalk, but sometimes they settled on the seed-head. Taking into account the usual habit of the larvæ of the genus, I feel no doubt that, in this species, it feeds in the seed-head of this plant. It must be confessed, however, that I have several times searched for the larva without success. On June 4th, I paid the place another visit, but *Degreyana* was worn and nearly over.

A month later—July 6th—I chanced to be examining a rough sloping piece of ground at the side of a chalk pit, which was covered with *Plantago lanceolata*, when a lovely *Degreyana* started up; this led to a search and the capture of four more, all beautifully fine, and in the course of the next few days I took a tolerable number of specimens, all among the same plant. On the 14th a specimen occurred two or three miles the other side of the city, and on the 18th, a most brilliant and lovely female at a gas-lamp in a fourth locality. On the 20th at the chalk pit they were getting quite worn out.

However, on August 23rd, a fine specimen again turned up at one of the first-named gas-lamps, although the field had been mowed in the summer, and much of the food-plant made into (very poor) hay. This time other matters interfered, and I could not work for it, but I feel convinced that *Degreyana*, like *atricapitana*, *Heydeniana*, and probably some other species, has three broods in a season—end of May, July, and end of August,—and that it is widely distributed over this part of the country, appearing and disappearing as the plantain gets the upper hand, or becomes killed out by the grass.

The capture of a good many specimens, and of different broods, is satisfactory, establishing as it does so thoroughly the distinctness of this species. Although varying from pale rosy-grey to a colour as brilliant as the brightest *roseana*, it never loses its distinctness, nor merges in the least into *ciliella*.—ID.

Note on Depressaria granulosella.—I had the good fortune in the autumn of 1869, to find the neat little *Depressaria granulosella* rather commonly in a lane near

here. The bank on one side of this lane was covered in the spring with *Anthriscus vulgaris*, and on this plant I expected in due time to find the larva. Accordingly, on June 17th, I went to search for it, but found that the intense heat had already withered every plant, except one, which chanced to be sheltered by some nettles. On this plant I found two or three larvæ, each inhabiting a terminal leaflet which had been drawn together into a tube. If I recollect right, these larvæ were greenish, but they spun up almost immediately, before I could send them to Mr. Stainton, and early in July produced *granulosella* as I expected. Shortly afterwards the moth was again to be found in the lane, and came rather freely to sugar.—ID.

Notes on Nothris verbasella.—In a notice last year of the habits of *Nothris verbasella* (E.M.M., Vol. vi, pp. 163-4) I stated that the young larvæ from eggs laid in July and August feed through the winter and spring, but I now find this is not the invariable rule. On September 8th I noticed a large plant of *Verbascum pulverulentum* of which the heart was almost entirely destroyed; and, on examination, found not only well-grown larvæ, but also a number of pupæ in and under the plant, from which the perfect insects emerged from 11th September till the end of the month.

I have since found two or three other plants similarly injured, so that there is evidently a partial second brood, and it may be that the eggs of this brood furnish the late larvæ in the spring, while it is reasonable to suppose that this second brood is produced from eggs of moths developed early in the summer. The second brood moths are not nearly so large as the first.—ID.

Note on the food-plant of Homæosoma saxicola, Vaughan.—In the reference to this species at p. 132 of the present Vol., the name *Anthemis* was inserted by the Editors after the food-plant "chamomile;" but I purposely omitted the Latin botanical name, not being sure whether the plant was *Anthemis* or *Matricaria*.—HOWARD VAUGHAN, Gaisford Street, Kentish Town.

Description of the larva and habits of Crambus fuscinelinus (Pedriolellus).—Thanks to Mr. Charles G. Barrett's researches at the Yarmouth denes, and his kindness in supplying me on the 11th of last June with several examples of the larvæ, and subsequently with their curiously constructed cases and cocoons containing pupæ, I am able to offer the following account of this species.

The larva is from five-eighths to three-quarters of an inch in length, moderately stout and cylindrical, but tapering a little just towards the hinder extremity; all the segments plump and well defined.

The ground colour is a delicate pearly shining grey, the front of each segment broadly banded with darker grey, which melts into the pale ground colour near the spiracles; the fold of skin at the segmental divisions is whitish. The head is shining brown, the mouth dark brown; on the second segment is a brown and polished semi-circular plate margined behind with darker brown, and bisected by a central dividing line of the grey ground colour; a slight indication of this dorsal line appears on the middle of each segment from the fifth to the twelfth: a striking feature is shown in the ornamentation of the tubercular spots, which are blackish-brown and most conspicuous, those on the third and fourth being paler than the

rest; on these segments, also, the dorsal tubercles are elongated transversely, and those on the sides are of a drop shape, as seen in some species of the *Hepiali*; on the other segments the tubercles on the back are large in proportion to the size of the larva, especially the front pairs, which are thick and transversely oblong, something like rather short bricks in shape, and only separated by the before-mentioned dorsal line; the hinder pairs are equally long transversely, but so thin as to be almost linear; beneath the oblong pairs of spots there comes on the side a row of circular spots one on each segment; and below these again are situated the minute black spiracles with an equally small black dot behind each; a small brownish plate is on the anal tip; the legs and prolegs are pale grey, these last tipped with brown; a fine short pale brown hair proceeds from each of the spots. Like several other larvæ that dwell in sand, they become, as they mature, of an ochreous tint in the ground colour, though their spots remain the same as before.

The tubular residence of agglutinated particles of sand constructed by this active larva is, as Mr. Barrett has previously informed us, four or five inches in length, though it varies in this respect according to the growth of the larva, which does not appear ever to leave its abode, but to lengthen it in front, while it moves on in quest of fresh food, so that the bitten-off stem of the plant on which it feeds appears to grow from the mouth of the tube: the hinder end of this is densely packed with frass of a whity-brownish or greenish colour, and evidently composed of small bits of grass stems scarcely altered by any digestive process.

The larvæ I had in confinement within a pot of sand, furnished with a growing plant of their native food, *Triticum junceum*, did not, after being turned out of their cases for inspection, spin any new ones, nor did they re-enter their previous abodes, but wandered about and spun a great quantity of useless web along the sides of the pot at the edge of the sand, and joined some of their deserted tubes together into a tangled mass, and finally contrived to gnaw a hole in their covering of new stiff muslin, and thus escaped.

The cocoon spun by the full-fed larva, and in which it completes its change to the pupa, is attached to the former opening of its previous residence at right angles, and in a perpendicular position; it varies in length from one to two inches, probably in proportion to the depth of the tube in the shifting sand, though one inch and a half is the average length; cylindrical, thick as a goose-quill at the top, and a little larger at the bottom, with both ends rounded; the point of junction with its former abode is nearly midway, but nearer the top than the bottom; its exterior composed of sand similarly to the tubes, but the well lined interior is much firmer, and is beautifully smooth with white silk, very tough and strong.

The pupa is from five to six lines in length, very pale shining brown in colour, and quite of an ordinary slender form, only the wing covers are seen to be very long in proportion to its size.—WM. BUCKLER, Emsworth, October 5th, 1870.

Captures, &c., of Lepidoptera near York.—The following species have been captured or bred by me from 1868 to 1870. A variety of *Amphidasis betularia* ♂, in May, 1868, with the upper-wings entirely black and the under-wings broadly bordered with black. *Collix sparsata*; I captured a few specimens in 1868, and also a larva from which I bred a fine specimen in June, 1869. *Lycæna Alexis*; a hermaphrodite example fell to my lot in 1868; right side female, left male, the

latter being the larger. *Eremobia ochroleuca*; in 1869 on flowers of *Senecio Jacobaea*. *Cirrhaedia xerampelina*; twelve larvæ this spring from bark of ash-trees. *Eupithecia fraxinata*; pupæ. *Cucullia chamomillæ*; one specimen, in April, 1870. *Eupithecia subnotata*; one specimen this year.—THOMAS WILSON, Holgate, York, October 18th, 1870.

Captures of Lepidoptera near Bury St. Edmunds.—Some days after the trip to Ranworth recorded by Mr. Barrett, at p. 111, I went over to Teddenham, near Bury St. Edmunds, and had good success, as the following account will show.

Having arrived on the evening of Tuesday, August 2nd, I went on the heath and low ground. The first insect I saw was *Spilodes sticticalis*, in a turnip field. On reaching a small bog on the heath I found *Lycæna Egon* and *Zygæna trifolii* sitting on the rushes. As it began to get dark, *Nonagria despecta* flew in plenty in the marshy ground beyond, with here and there specimens of *Acidalia immutata*. At sugar I took sundry *Agrotis tritici*, *valligera* and *puta*, and *Cerigo Cytheræa* in plenty, one *Agrotis* seemed to me to be *obelisca*, but perhaps it was only a variety of *tritici*. On my return to the inn, I took a moth close to the village which proved to be *Chesias obliquaria*,—the first I had ever seen alive.

Next morning I went to look for larvæ of *Dianthæcia irregularis*, and, sure enough, I took them in great numbers, on *Silene otites*, the Spanish Catch-fly; but unfortunately nine out of ten, or nearly so, proved to have been ichneumoned. I sent larvæ to five or six well-known Entomologists, but I find that not more than one or two succeeded in getting even one larva to go down; all, or nearly all, that I sent having been stung. I trust, however, that some of us may be able to rear it. I also took a few larvæ of *Lithostege griseata* on *Sisymbrium sophia*: earlier in the season it would have been common. I also took a few more *Agrophila sulphuralis*, one *Acontia luctuosa*, two *Aspilates citraria*, and a beautiful dark, yet bright, red specimen of *Acidalia rubricata* ♀, which laid some eggs, the larvæ from which promise to do well under the care of Mrs. Hutchinson, to whom I sent them. I also swept up single larvæ of *Anticlea sinuata* and *Hecatera serena*, which were kindly determined for me by Mr. Buckler.—E. N. BLOOMFIELD, Guestling Rectory, October 15th, 1870.

A fact!—A reverend acquaintance of mine, who dabbles in moth-catching, has confided to me his belief that the little "silver-fish" (*Lepisma*) is the larva of *Alucita polydactylia*, and its food is the paper on the walls of his bed-room! The "fish" swarm on his walls—the moths swarm in his windows: the connection is clear, and I have had to give in, beaten by my friend's invincible—stupidity. J. HELLINS, Exeter, 24th October, 1870.

PROCEEDINGS OF THE HAGGERSTON ENTOMOLOGICAL SOCIETY.—MR. E. BARLOW, President, in the Chair.

1870. August 4th.—MR. E. G. MECK exhibited specimens of *Lythria purpuraria* bred by Mr. Button of Gravesend, also specimens of *Scoparia Zelleri*, *Dicrorampha flavidorsana*, *Acidalia emutaria*, and *Herminia derivalis*. MR. ELISHA exhibited living larvæ of *Pericallia syringaria*, and examples of *Scoparia Zelleri*, captured at Box Hill. MR. T. EEDLE exhibited specimens of *Dasydia obfuscata*, *Emmelesia blandiata*, *Coremia munitata*, *Erebia Cassiope*, &c. MR. CLARK exhibited several varieties of *Arctia caja*.

August 11th.—Mr. Bartlett brought for exhibition a variety of *Boarmia repandata*, together with specimens of *Catocala promissa* and *Catocala sponsa*. Mr. A. Harper exhibited a variety of *Liparis monacha*. Mr. Boden exhibited a very dark specimen of *Setina irrorella* and *Lithosia complana*.

August 18th.—Mr. E. G. Meek exhibited *Pempelia obductella*, captured by Mr. Button of Gravesend, *Acidalia osseata*, and a variety of *Argynnis Adippe*, the usual silver spots on the under-side of the hind-wings being absent. Mr. Mooro exhibited an example of *Deilephila galii*, captured at Stamford Hill.

August 25th.—Mr. Bartlett brought specimens of *Phycis abietella* for exhibition. Mr. E. G. Meek produced some larvæ of *Scardia choragella* feeding in a species of fungus. Mr. T. Eedle exhibited specimens of *Fidonia pinetaria*. Mr. Elisha exhibited a series of fine bred specimens of *Pericallia syringaria*. Mr. Bryant exhibited *Emmelesia unifasciata* and *Nonagria elymi*.

During the month 91 members attended the meetings, and one fresh member was elected.

September 1st.—Messrs. Frederick Moore and Hoey were elected members. Mr. Boden exhibited fine specimens of *Angerona prunaria*, also a variety of the same species. Mr. Elisha exhibited a very dark variety of *Tephrosia crepuscularia*. Mr. Eedle, Jun., exhibited some beautiful varieties of *Pædisca ophthalmicana*, *Melanthia rubiginata*, *Lobophora lobulata*, and *Hypsipetes elutata*, to the notice of the members. Mr. Hoey exhibited a life-like preserved larva of *Stauropus fagi*.

September 8th.—Messrs. Lepelley and Rochfort were elected members. Mr. Elisha exhibited bred specimens of *Sesia chrysidiformis*. Mr. T. Eedle showed the specimen of *Pachnobia alpina* captured by him near the summit of a high mountain in Scotland this season, it being the third known British specimen; he also exhibited beautiful varieties of *Xylophasia polyodon*, *Cidaria immanata* and *Iarentia ruficinctata*. Mr. Harper exhibited varieties of *Arctia villica*. Mr. Lormier exhibited the preserved larvæ of *Emphyra porata*, *Acronycta psi*, *Hadena pisi*, *Dianthæcia conspersa*, *Zenzera æsculi*, and *Acronycta aceris*.

September 15th.—Messrs. Franklin and Paulini were elected members. Mr. T. Eedle exhibited specimens of *Eupæcilia sub-roseana*, *Penthina prælogana*, *Peronea caledoniana*, *Coccys vacciniana*, and *Euchromia arbutana*. Mr. E. G. Meek exhibited a specimen of *Dianthæcia irregularis* bred by the Rev. W. H. Wratistlaw, *Polia nigrocincta* and *Epunda nigra* bred from larvæ collected by him (Mr. Meek) in the Isle of Man, also varieties of *Cirrhædia xerampelina* captured in the same island by Mr. Warrington, together with specimens of *Pieris Daphidice* and *Lycæna Acis* taken by Mr. Button of Gravesend. Mr. Bryant exhibited specimens of *Agrotis agathina*.

September 22nd.—Mr. Elisha exhibited examples of *Catocala sponsa*. Mr. T. Eedle exhibited specimens of *Eupithecia consignata* and *Thera juniperata*, bred by him from larvæ found feeding on juniper very high up on one of the mountains in Scotland. Mr. Raine exhibited specimens of the preserved larvæ of *Abraxas ulmata*. Mr. Lormier exhibited specimens of the preserved larvæ of *Orygia pudibunda* and *Notodonta camelina*. Mr. J. A. Clark exhibited a variety of *Polyommatus phlæas*, one of the under-wings being whitish.

September 29th.—Mr. Elisha exhibited specimens of *Ptilophora plumigera*, *Notodonta cucullina*, *Ennomos erosaria*, and *Herminia derivalis*. Mr. E. G. Meek exhibited a very dark specimen of *Epunda lichenea* from the Isle of Man, also a *Nola* which he thought might probably prove to be a new species, the specimen in question having been captured by Mr. Button. Mr. J. Moore exhibited a fine variety of *Lyceana Adonis*. Mr. Healy brought for exhibition the imago, larva, and cocoon of *Camponiscus Healwi*, a rare species of *Tenthredo* that he had been very successful in rearing this season.

The attendance of members at the meetings during this month amounted to 121.

ENTOMOLOGICAL SOCIETY OF LONDON, 7th November, 1870, H. W. BATES, Esq., Vice-President, in the Chair,

T. H. Briggs, Esq., was elected a Member.

Mr. McLachlan exhibited, on behalf of Mr. Buckler, coloured figures of larvæ of *Deilephila galii*, sixteen of which had been taken, relating to varieties and differences of age. Also one figure of the larva of *D. livornica*.

Mr. Bond exhibited two examples of *Nonagria brevilinea*, Fenn (see E.M.M. vol. i, p. 107), of which a dozen examples had been taken at Horning Fen, by Mr. King. Also a ♂ *Caradrina cubicularis* in cop. with a ♀ *Senta ulva*.

Several communications were made respecting the extreme abundance this autumn of *Chlorops lineata*.

Mr. E. Saunders exhibited a specimen of *Macrotoma heros*, Dohrn, from the Fiji Islands, being probably the largest known beetle. Mr. Bates said it was not a *Macrotoma*, but belonged to the genus *Xixuthrus* of Thomson.

Mr. F. Smith referred to his exhibition, 1st November, 1869, of *Melœ rugosus*. He had again taken 25 specimens near Prittlewell. They were of very retired habits and never came into the daylight. Two females were placed in a flower-pot with earth, for the purpose of obtaining eggs if possible; but they burrowed into the earth and there remained, causing him to think that they naturally hibernated, and did not lay their eggs till the spring.

Mr. Pascoe mentioned that he had once seen near Narbonne several examples of *Melœ maialis* impaled upon the thorns of *Opuntia*, in such a state as to render it impossible that they could have been placed there by birds.

Mr. Howard Vaughan exhibited the new species of *Phycidæ* described by him at p. 130 of the present Vol.; also the true *Acidalia ochrata*, *Leucania albipuncta*, &c.

Mr. Albert Müller exhibited galls of *Cynips renum* of Hartig, on the under-side of oak-leaves from Shirley; also those of *Cynips agama*—pea-shaped, and on oak.

Mr. Dunning exhibited *Anobium paniceum* feeding upon Cayenne pepper: also a collection of *Lepidoptera* from the Snowy Valley near Shanghai, captured by Mr. Holdsworth.

The following papers were read:—"On Butterflies collected in Basuto-land by Mr. Bowker," by Mr. Trimen: "Contributions to an insect-fauna of the Amazon Valley (*Cerambycidae*, concluded)," by Mr. H. W. Bates: "Descriptions of new genera and species of Australian *Curculionidæ*," by Mr. Pascoe: "Notes on *Eurytominæ*," by Mr. Walker.

REMARKS ON THE GENUS *GELECHIA*, AS SUB-DIVIDED BY VON HEINEMANN, IN HIS "SCHMETTERLINGE DEUTSCHLANDS UND DER SCHWEIZ," ZWEITE ABTHEILUNG; BAND II, HEFT. I.

BY H. T. STAINTON, F.R.S.

Of late years, most Micro-Lepidopterists have felt uneasy at the growing unwieldiness of the genus *Gelechia*, and have been prepared to welcome eagerly any feasible plan of dividing it into genera of more moderate extent. A genus of from two hundred to three hundred (European) species, occupying five or six drawers of a cabinet, becomes a nuisance, as one feels that were the species arranged *alphabetically*, they would be more easily found both in books and in the cabinet.

It was known that Herr von Heinemann was preparing, in his forthcoming volume on the *Tineina* of Germany and Switzerland, to break up, to a considerable extent, the genus *Gelechia*. The experiment had been tried by Herrich-Schäffer, in his fifth volume of his "Schmetterlinge von Europa," wherein he has separated a number of the species under the generic name of *Anacampsis*, and removed two others to form his genus *Recurvaria*.

Von Heinemann has gone far further than this, for he divides our old genus *Gelechia* into no less than twenty-five genera. Fourteen of these genera, it is true, consist only of one, two, or at the most three species, and but six of the genera are more comprehensive, varying, in their capacity, from thirteen to sixty-two species; and hence, if the divisions he has here indicated can really be maintained, a great step will have been gained in our study of these insects.

The characters on which he has relied, when forming these genera, have been "the ocelli, the ramifications of veins 6—9 of the anterior wings, the point of origin of vein three of the posterior wings, the form of the wings, the length of the cilia, and the differences of the palpi;" and he says that he "believes that some of these genera rest on stable foundations, whereas others he does not fail to perceive shade insensibly one into the other."

I quote the characters of the twenty-five genera given by Herr von Heinemann, enumerating under each genus the British and German species. The British species which have not been detected in Germany will be indicated by an asterisk.

GELECHIA (p. 193).

Middle joint of the palpi beneath with standing-out scales, with a longitudinal furrow, terminal joint thin and pointed.

Maxillary palpi very small.

Anterior wings narrow, posteriorly narrowed from the inner margin, with twelve (rarely eleven) ribs, only veins seven and eight are stalked or coincide.

Posterior wings broader, or as broad as the anterior wings, slightly indented before the apex, the middle cell closed, veins three and four from the same spot length of the cilia less than the breadth of the posterior wings.

The twenty-four British species referable to this genus are—

Vilella,	Hippophaëlla,	Ericetella,	Galbanella,
Pinguinella,	*Celerella,	Lentiginosella,	Borecella,
Nigra,	Distinctella,	Mulinella,	Solutella,
Muscosella,	Soroculella,	*Divisella,	Longicornis,
Cuneatella,	Velocella,	*Fumatella,	Diffinis,
Rhombella,	Peliella,	Malvella,	Scalella.

The additional species occurring in Germany or Switzerland are forty-one in number—

Reuttiella,	Albifaciella,	Interruptella,	Albifemorella,
Basiguttella,	Nigricans,	Petasisæ,	Melaleucella,
Albicans,	Oppletella,	Lutilabrella,	Rosalbella,
Tragicella,	Conspurcatella,	Angustella,	Electella,
Tephritidella,	Confusella,	Cognatella,	Lugubrella,
Incomptella,	Scotinella,	Nebulosella,	Viduella,
Spurcella,	Flavicomella,	Continuella,	Luctuella,
Suspectella,	Decolorella,	Perpetuella,	Quadrella,
Holosericcella,	Ignorantella,	Interalbicella,	Maculatella,
Præclarella,	Infernalis,	Elatella,	Cytisella.
Striolatella,			

BRACHMIA (p. 230).

Middle joint of the palpi thickened by appressed scales, terminal joint shorter, thick, filiform, pointed.

With ocelli

Anterior wings narrow, long-pointed, with twelve ribs, veins seven and eight springing one after the other out of vein six.

Posterior wings as broad as the anterior wings, at the hind margin flatly rounded with sharply protruding apex and long cilia, the middle cell closed, veins six and seven on a long stalk, three and four from the same spot.

This genus contains only one British species—

Mouffetella.

Four other German species are given in Von Heinemann's work—

Pruinosaella,	Triatomea,	Nigricostella,	Petiginella.
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BRYOTROPHA (p. 233).

Palpi strongly recurved, middle joint with smooth scales, beneath much expanded, with a longitudinal furrow, terminal joint longer, pointed.

With ocelli.

Anterior wings narrow, posteriorly long pointed, with twelve ribs, veins seven and eight on one stalk, running into the costa.

Posterior wings as broad as the anterior wings, far beyond the middle with the hind margin much rounded or broken, produced into a long and sharp (rarely short) apex, the middle cell closed, veins six and seven on one stalk, veins three and four from the same point, cilia as long as the posterior wings are broad.

This comprises nine British species—

Terrella,	Senectella,	Affinis,	Domestica,
*Politella,	Mundella,	Umbrosella,	Basaltinella,
Desertella,			

and nine additional in Germany or Switzerland—

Latella,	Lutescens	Glabrella,	Tectella,
Alpicolella,	Plebejella,	Minorella,	Cinerosella.
Decrepitella,			

The notion is that all the larvæ of this genus are moss-feeders.

LITA (p. 244).

Palpi slightly recurved, middle joint beneath with standing-out and loose scales, with a longitudinal furrow, terminal joint thin and pointed.

With ocelli.

Anterior wings narrow, posteriorly long-pointed, with twelve ribs, veins seven and eight on one stalk.

Posterior wings as broad as the anterior wings, beyond the middle with the hind margin rounded or broken, produced in a sharp apex, the middle cell closed, veins three and four from the same spot, the cilia longer than the breadth of the posterior wings.

This comprises nineteen British species—

Artemisiella,	Acuminatella,	Maculea,	Junctella,
Atriplicella,	Æthiops,	Tricolorella,	Marmorea,
Instabilella,	*Costella,	*Fraternella,	Vicinella,
*Ocellatella,	Hübneri,	*Viscariella,	Leucomelanella.
Obsoletella,	Knaggsiella,	Maculiferella,	

and thirty-three additional German or Swiss species—

Strelitzella,	Porcella,	Nigripalpella,	Tristella,
Inustella,	Trochilella,	Pygmæella,	Kiningerella,
Psilella,	Murinella,	Ingloriella,	Fischerella,
Diffuella,	Rancidella,	Brahmiella,	Cauligenella,
Horticolella,	Chrysanthemella,	Moritzella,	Saginella,
Tussilaginella,	Halonella,	Laceratella,	Tischeriella,
Insulella,	Pauperella,	Albifrontella,	Sestertiella,
Diminutella,	Melanella,	Alsinella,	Trauniella.
Pallidella,			

TELEIA (p. 272).

Palpi slightly recurved, middle joint beneath expanded by thick, flatly pressed scales, terminal joint thin and pointed.

No ocelli.

Anterior wings posteriorly long pointed, with twelve ribs, veins seven and eight on one stalk.

Posterior wings trapezoidal, indented before the apex, veins, three and 4 from the same spot, cilia longer than the breadth of the posterior wings.

This contains ten British species—

Vulgella,	Fugitivella,	Notatella,	Luculella,
Scriptella,	Humeralis,	Triparella,	Dodecella,
Sequax,	Proximella,		

and three additional German species

Alburnella,	Fugacella,	Myricariella.
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RECURVARIA (p. 279).

Palpi recurved, middle joint thickened beneath with quite thick scales, with no longitudinal furrow, terminal joint shorter, thin and pointed.

No ocelli.

Anterior wings narrow, with twelve ribs, veins seven and eight springing one after the other out of vein 6.

Posterior wings as broad as the anterior wings, beyond the middle rounded, with produced apex, veins six and seven remote at their origin, cilia nearly twice as long as the breadth of the posterior wings.

This genus contains only three species—

Leucateella,† Nanella, *Lathyrella.

POECILIA (p. 281).

Palpi slightly recurved, thin, middle joint beneath with slightly standing-out scales, with no furrow, terminal joint shorter, filiform.

Anterior wings posteriorly short-pointed, with less than twelve ribs, veins seven and eight on one stalk, the middle cell open.

Posterior wings not as broad as the anterior wings, posteriorly obliquely truncate, with narrow long-produced apex, the middle cell open, cilia more than twice as long as the posterior wings are broad.

This contains only two British species—

Albiceps and Gemmella.

One other, *Nigrinotella*, occurs in Germany.

ARGYRITIS (p. 283).

Palpi slightly recurved, middle joint at the end loosely scaled, with a longitudinal furrow, terminal joint of the same length.

Ocelli small.

Anterior wings narrow, posteriorly long-pointed, with twelve ribs, veins seven and eight on one stalk.

Posterior wings not as broad as the anterior wings, posteriorly obliquely truncate, with narrow far-produced apex, cilia more than three times as long as the breadth of the posterior wings.

This comprises two British species—

Pictella and *Tarquiniella.

One other, *Superbella*, occurs in Germany.

NANNODIA (p. 284).

Palpi short, slightly recurved, filiform, with appressed scales, terminal joint shorter than the middle joint.

With ocelli.

Anterior wings narrowed from the middle, with twelve ribs, veins seven and eight on one stalk, rib twelve very short.

Posterior wings not as broad as the anterior wings, oblong with a long-produced apex, no vein 6, the middle cell posteriorly open, cilia more than twice as long as the breadth of the posterior wings.

This consists only of the two species—

Stipella (*Næviferella*) and Hermannella.

† It seems strange that *leucateella* should be separated from *rosalbella*, which is referred to the genus *Gelechia*, and that *lathyrella* should be separated from *nigricostella*, which is referred to the genus *Brachmia*.—H. T. S.

APODIA (p. 286).

Palpi shorter, slightly recurved, filiform, middle joint with appressed scales, compressed, terminal joint shorter.

With ocelli.

Anterior wings narrowed from the middle, with twelve ribs, veins seven and eight springing one after the other out of vein six.

Posterior wings not as broad as the anterior wings, elongate trapezoidal, with long-produced apex, vein three proceeding from before the hinder angle of the cell, veins six and seven separate, cilia more than twice as long as the breadth of the posterior wings.

This contains only the single species—

Bifractella.

SITOTROGA (p. 287).

Middle joint of the palpi beneath with standing-out scales, not furrowed, terminal joint longer, aciculate.

With ocelli.

Anterior wings very long and narrow, posteriorly long-pointed, with twelve ribs, veins seven and eight springing one after the other out of vein six.

Posterior wings narrower than the anterior wings, oblong, with very long protruding apex, vein three proceeding from before the hinder angle of the middle cell, veins six and seven on one stalk, cilia more than twice as long as the breadth of the posterior wings.

This contains only the single species—

Cerealella.

PROCHEUUSA, (p. 288).

Palpi short, slightly recurved, filiform, with appressed scales, terminal joint shorter than the middle joint, pointed.

Anterior wings narrow, posteriorly pointed, veins seven and eight springing one after the other out of vein six.

Posterior wings very narrow (narrower than the anterior wings) with long-produced apex, veins three and four from one spot, as also veins six and seven, cilia more than three times as long as the breadth of the posterior wings.

This genus comprises only three (rather discordant) species.

Subocellea,

Inopella,

Osseella.

ERGATIS (p. 295).

Palpi recurved, middle joint compressed, beneath with no longitudinal furrow.

With ocelli.

Anterior wings long-pointed, with twelve ribs, veins seven and eight on one stalk, cilia at the base with mealy scales.

Posterior wings nearly as broad as the anterior wings, elongate trapezoidal, with long-produced apex, veins six and seven remote at their origin, vein three proceeding from far before the hinder angle of the middle cell, cilia almost twice as long as the breadth of the posterior wings.

The genus comprises the three British species—

Brizella,	Subdecurtella,	Ericinella,
and also three additional German species—		
Heliacella,	Subericinella,	Decurtella.

DORYPHORA (p. 298).

Palpi projecting, slightly recurved, middle joint with appressed scales, terminal joint shorter.

With ocelli.

Anterior wings posteriorly narrowed from both margins, with twelve ribs, veins seven and eight on one stalk, cilia hair-shaped.

Posterior wings narrower than the anterior wings, trapezoidal with long-produced apex, vein three proceeding from before the hinder angle of the middle cell, cilia longer than the breadth of the posterior wings.

†Palustrella,	Lutulentella,	Lucidella,
Pulveratella,	Arundinetella,	Suffusella,
(Intaminatella)		

and fourteen additional German species—

Carchariella,	Servella,	Quaestionella,	Acutangulella,
Luteella,	Nomadella,	Farinosae,	Rumicetella,
Latiuscula,	Consersella,	Sepicolella,	Elongella.
Griseella,	Morosa,		

MONOCHROA (p. 308).

Palpi recurved, the middle joint long and thick with appressed scales, compressed, terminal joint much shorter.

With ocelli.

Anterior wings narrowed from the base on the side of the inner margin, long-pointed, with 12 ribs, veins 7 and 8 on one stalk, cilia hair-shaped.

Posterior wings narrower than the anterior wings, parallel, with long, far-produced apex, veins 6 and 7 remote at their origin, vein 3 proceeding from far before the hinder angle of the middle cell, cilia three times as long as the breadth of the posterior wings.

This comprises, according to Von Heinemann, only the single species *Tenebrella* as he follows Gartner in reputed *Tenebrosella* only the other sex of *Tenebrella*.

LAMPROTES (p. 309).

Palpi recurved, middle joint with appressed scales, compressed, terminal joint of equal length or rather longer, pointed.

Ocelli small, indistinct.

Anterior wings beyond the middle narrowed from the inner margin, long-pointed, with 12 ribs, veins 7 and 8 on one stalk, cilia hair-shaped.

Posterior wings narrower than the anterior wings, elongate-trapezoidal, with long far-produced apex, veins 6 and 7 remote at their origin, vein 3 proceeding from far before the hinder angle of the middle cell, cilia more than twice as long as the breadth of the posterior wings.

† Though not included in Von Heinemann's work, *palustrella* occurs near Stettin.

This only contains one British species—

Atrella.

Four other species occur in Germany—

Unicolorella, *Plumbella*, *Rhenanella*, *Micella*.

ANACAMPSIS (p. 311).

Palpi long and thin, strongly recurved, middle joint with appressed scales, beneath compressed, terminal joint longer, thin and pointed.

Ocelli small.

Anterior wings from beyond the middle long-pointed, with 12 ribs, veins 7 and 8 on one stalk.

Posterior wings as broad as, or narrower than, the anterior wings, trapezoidal, with long, sharp, far-produced apex, veins 3 and 4 from the hinder angle of the middle cell, veins 7 and 8 on one stalk, or from the same spot, cilia from $1\frac{1}{2}$ to 3 times as long as the breadth of the posterior wings.

This comprises 10 British species.

<i>Coronillella</i> ,	* <i>Immaculatella</i> ,	<i>Ligulella</i> ,	<i>Tæniolella</i> ,
<i>Sangiella</i> ,	* <i>Nigritella</i> ,	<i>Vorticella</i> ,	* <i>Sircomella</i> .
<i>Anthyllidella</i> ,	<i>Albipalpella</i> ,		

Ten others occur in Germany.

<i>Patruella</i> ,	<i>Remissella</i> ,	<i>Cincticulella</i> ,	<i>Captivella</i> ,
<i>Biguttella</i> ,	<i>Vetustella</i> ,	<i>Sarrothamnella</i> ,	<i>Albifrontella</i> .
<i>Ignobiliella</i> ,	<i>Azosterella</i> ,		

ACANTHOPHILA (p. 320).

Palpi recurved, middle joint long, smooth, compressed, terminal joint half as long.

No ocelli.

Anterior wings parallel, far beyond the middle shortly narrowed, with 12 ribs, veins 7 and 8 on one stalk.

Posterior wings as broad as the anterior wings, beyond the middle slightly rounded, with moderately projecting broadly triangular apex, vein 3 from the hinder angle of the middle cell, cilia as long as the posterior wings are broad.

This contains only the single species—

Alacella.

TACHYPTILIA (p. 321).

Palpi strongly recurved, middle joint short, smooth, beneath compressed, terminal joint twice as long, thin and pointed.

With ocelli.

Anterior wings parallel, with short, moderately oblique hind margin and blunt apex, with 12 ribs, veins 7 and 8 on one stalk.

Posterior wings as broad as, or rather broader than, the anterior wings, trapezoidal, slightly indented before the roundish apex, cilia from half as long to nearly as long as the posterior wings are broad.

This comprises only the two British species—

Populella and *Temerella*.

Two others occur in Germany.

Scintillella and *Subsequella*.

BRACHYGLOSSATA (p. 323).

Palpi long, strongly recurved, middle joint smooth, beneath sharp-edged, terminal joint of equal length, thin and pointed.

No ocelli.

Anterior wings posteriorly broader, with steep wavy hind-margin and rounded apex, with 12 ribs, veins 7 and 8 on one stalk.

Posterior wings half as broad again as the anterior wings, trapezoidal, slightly indented before the rounded apex, the middle cell posteriorly closed, cilia one-fourth as long as the posterior wings are broad.

This comprises only one British species—

Cinerella.

Two other species occur in the Alps—

Tripunctella and Maculosella.

The first named is about the commonest of the old genus *Gelechia* in those elevated regions.

CERATOPHORA (p. 325).

Palpi long, recurved, middle joint smooth, beneath sharp-edged, terminal joint shorter, long-pointed.

No ocelli.

Anterior wings broader posteriorly, with short, oblique hind-margin, and with 12 (rarely 11) ribs, veins 2 and 3 from the same spot.

Posterior wings broader than the anterior wings, trapezoidal, very slightly indented before the apex, the middle cell open, cilia half as long as the posterior wings are broad.

This comprises only two British species—

Inornatella and Rufescens.

Three other species occur in Germany—

Lutatella, Triannulella and Lineolella.

RHINOSIA (p. 327).

Palpi long, recurved, middle joint moderately thickened, compressed, terminal joint shorter, thin and pointed.

Maxillary palpi distinct, converging.

Ocelli concealed.

Anterior wings elongate, with distinct apex, more strongly rounded at the anal angle, with 12 ribs, veins 7 and 8 on one stem.

Posterior wings as broad as the anterior wings, of uniform breadth to beyond the middle, then narrowed, hardly indented below the apex, with 8 ribs, vein 7 proceeding from the transverse venule, cilia two-thirds as long as the posterior wings are broad.

This genus is totally unrepresented with us: it comprises five German species;

Monastricella, Sordidella, Ferrugella, Formosella.
Denisella,

CLADODES (p. 330).

Palpi recurved, middle joint with appressed scales, compressed, with no furrow beneath, terminal joint shorter.

No ocelli.

Anterior wings broader posteriorly, with steep hind-margin, veins 8 and 9 springing one after the other out of vein 7, vein 7 runs into the apex, veins 2 and 3 on one stalk.

Posterior wings rather broader than the anterior wings, trapezoidal, slightly indented below the apex, the middle cell open posteriorly, cilia as long as the posterior wings are broad.

The genus only contains one British species—

Gerronella,

and one additional German species—

Dimidiella.

The two remaining genera *Gonia* and *Euteles*, neither of them represented in this country, and each consisting of a single species, form a separate section, thus characterized (p. 331).

Anterior wings with no sub-cell, veins 7 and 8 on one stem, including the apex; posterior wings slightly indented below the apex, palpi recurved, with appressed scales.

No ocelli.

Anterior wings rather broad; posterior wings nearly as broad or rather narrow, their cilia nearly as long as the posterior wings are broad.

GONIA (p. 331).

Anterior wings broad, with falciform projecting apex and steep wavy hind-margin.

The middle cell of the posterior wings closed.

The upper spur of the hind tibiæ far before the middle.

The only species is—

Pudorina,

a very handsome insect, hitherto only found in Silesia.

EUTELES (p. 333).

Anterior wings broad, slightly narrowed posteriorly, with strongly rounded anal angle and steeply curved hind-margin.

The middle cell of the posterior wings open, vein 5 wanting.

The upper spurs of the hind tibiæ behind the middle.

There is only one German species in this genus, the broad-winged, Tortriciform South European

Kollarella,

the claim of which to be included amongst the German *Lepidoptera* seems to rest on its occurrence at Fiume!

Having briefly put before the readers of this Magazine a sketch of Von Heinemann's views, I must reserve my own observations for some other opportunity.—Mountsfield, Lewisham, October 14th, 1870.

P.S.—With reference to the foot-note at p. 168, Herr Von Heinemann writes me that *Lathryrella* should have been referred to the genus *Brachmia*, coming next to *nigricostella*; it was through oversight that he had enumerated it among the non-German species of the genus *Recurvaria*.—H. T. S., Dec. 16th, 1870.

FOUR DAYS AT THE DRACHENFELS.

BY R. C. R. JORDAN, M.D.

Having a few days that could be spared from work, I thought that I would take a ramble by the Rhine, which had not been visited by me for many years; and the 10th, 11th, 12th, and 13th of June were spent at Königswinter. These days were given up entirely to entomology, and, therefore, a slight account of them may be of some interest. In 1853, I had an afternoon of insect-hunting in the wood just below the Castle of the Drachenfels, on the 24th of August: the Lepidoptera then captured were *Lycæna Dorilis* (common), *Smerinthus populi* (one larva), *Callimorpha Hæra*, *Hypogymna dispar* (the males flying very actively on the wing like *Lasiocampa quercûs*), *Cosmia trapezina*, *Rivula sericealis*, *Pyrausta punicealis*, *Pterophorus pentadactylus*, *Minoa euphorbiata* (common), *Eubolia mæniaria*, *E. bipunctaria*, and *Campptogramma bilineata*.

We came to the excellent Hotel de l'Europe on the evening of the 9th of June, and early on the morning of the 10th, my little girl and I set off for the Drachenfels. The day was not good for entomology, there was a high wind which just kept off the rain that otherwise would have fallen; it was, however, favourable for walking, which, perhaps, made the scales of the balance even. We first crossed the railroad and went up the little path amongst the vineyards, and at the first wood began to entomologize; *Lithographia Penkleriana* was very abundant amongst the oaks, and *Harpella Geoffrella* was also common. At the end of this little wood were plenty of broom plants, on beating which, *Cemiosoma spartifoliella* appeared in clouds, and this was the case wherever broom occurred in the district; we then emerged on a hilly field with a little round summer house on the summit, here a bad specimen of *Satyrus Megara* occurred, and afterwards in some plants of tansy, amongst the corn, *Dicrorampha plumbagana* was met with; then followed the wood surrounding the castle, and here the larvæ of *Hypogymna dispar* were common enough for us to find two on one oak wreath; amongst the undergrowth of shrubs were abundance of plants of *Populus tremula*, these had many galls upon them, and *Saperda populnea* was so frequent as to become troublesome; *Euonymus europæus* was also plentiful, and its branches were in great measure stripped by the larvæ of *Hyponomeuta cronymella*; there were very numerous pyriform galls on the leaves of the beech; here *Pygæra bucephala* occurred, asleep, of course.

On going up to the Drachenfels, a fine male *Satyrus Mæra* was settled on the castle out of reach, we could not make him fly, and he finally folded his wings and went to sleep. We then returned by the same path, and after going down a little way diverged into an open space strewn abundantly with large masses of rock; there were fir-trees near, and *Colcophora laricella* was particularly plentiful, and so was *Pyrausta punicealis* on the *Origanum*, which helped to form the carpet under our feet. Here we were fortunate enough to take *Æcophora Lambdella* and *Butalis Scopolella* by beating amongst the shrubs; by sweeping, curiously, *Ægeriatipuli formis* was captured, and yet we could find no currant bushes near. After awhile, we again went downwards, and on coming to the end of the wood of the Drachenfels, turned off towards the Wolkenberg through a little pine copse, and here *Coccyx hyrciniana* was found in swarms, and *Ephyra omicronaria* was met with asleep on a pine trunk; after this, was a little hedge with *Prunus spinosa* and *Rosa canina*, and out of this we beat *Roxana arcuana*, *Antithesia pruniana*, *Cnephasia hybridana*, and *Argyrotoza Conwayana*; then proceeding up the wooded path leading to the Wolkenberg, we found by beating *Acidalia incanata* and *remutata*, *Gelechia aleella*, *Acrolepia cariosella*, and *Hyposolophus fasciellus*: *Tischeria complanella* was abundant amongst the oak, and on the summit of the Wolkenberg *Crambus chrysonuchellus* was met with. In coming down we caught *Phasianæ plumbaria*, which was common, and one female *Gomphus*, the only dragon-fly seen that day, and, with the exception of a *Libellula depressa*, the only one we saw in the neighbourhood. We again went to the Drachenfels, and dined at the little Gast-hof there, and in coming back by the same route, we took *Acidalia aversata*, *Ephyra punctaria*, *Camptogramma bilineata*, *Phlæodes tetraquetrana*, and *Gelechia tripar-ella*; *Carabus auratus* came out as it grew towards evening where we had seen *Cicindela campestris* in the morning, and we found two of *Dasychira pudibunda* asleep on a stone wall which bounded a vineyard in our road.

After breakfast on the 11th, we again set out for a ramble, at first taking the same road through the vineyards, but diverging from it on entering the wood, this brought us to a road which we followed until it divided at a spot where there was a directing post, and a very pretty stone cross. We took the left-hand turning to the Wolkenberg, and just past this spot, *Adela fibulella* was found basking as usual in the

flower of a *Veronica*; a little further on, under an apple tree (for there was an orchard on one side of the road), was *Argyresthia curvella*, and in some meadows near, by sweeping we obtained *Micropteryx Seppella*, *Crambus hortuellus*, and *C. pratellus* in abundance. Ascending higher, we came to some drier cornfields, and by the bank-side, which served as a hedge, we met with *Grapholitha hypericana*; in a clover field, *Stigmonota compositella* was found, and *Eupæcilia nana*; a tansy hedge around this seemed to be a perfect paradise for *Dicroramphæ*: of these, *D. plumbagana* was the most abundant, but *D. cinerosana* and *D. agilana* occurred also, as well as our common *D. Petiverella*. After this, we came to a wood where we met with *Hypsolophus fasciellus* again, and such swarms of *Coccyx hyrciniana* as to be annoying; there were abundant cocoons of *Talæporia pseudo-bombycella* and *Psyche*. Of the latter, we brought home one which produced a male, and identified the species; in a spider's web, the remains of an unfortunate *Epione advenaria* were here found, and in the herbage amongst *Orobis tuberosus*, *Anchylopera Lundana* was very abundant; *Anchylopera biarcuana* occurred also. The wood became bounded on the left by some rich meadows, but just at one corner of them was a drier spot with broom plants growing, here we caught *Cænonympha Pamphilus* (the only butterfly seen this day), *Zygæna loniceræ*, *Euclidia glyphica*, *Fidonia limbaria*, and *Crambus pratellus*; the meadows themselves swarmed with *Emmelesia albulata*, *Botys fuscalis*, and a species of *Eupithecia*; *Zygæna loniceræ* was also very abundant, and my little girl caught one *Ino statices* in the flower of a large blue *Centaurea*. We were evidently skirting round the Wolkenberg, and some way from the summit of any hill, so a little further on we entered the wood on the right side, and clambered up to the crest; the open spaces in the wood were very gay with *Arnica* flowers, on which lurked a large crab-shaped spider almost as yellow as the flowers themselves, and lilies-of-the-valley were yet in bloom. By beating in the trees, we got *Lithosia mesomella*, *Anchylopera ramella*, *Phlæodes tetraquetra*, and *Lithographia campoliliana*. The following were flying about commonly: *Fidonia atomaria*, *F. limbaria*, *Venilia maculata*, and *Euclidia glyphica*; *Pleurota bicostella* was also disturbed as we walked along.

The view looking across to the Wolkenberg and the Drachenfels was very grand, and the valley beneath with its village and little church looked invitingly pretty, but rain threatened, and we made rather a

hurried descent home, and somehow missed our path, coming back to Königswinter by quite a different route. On our way, we caught our first *Glyphipteryx Bergstraessella*, it was beaten out of a beech, close by a little arbour in the road, and was mistaken by me at a superficial glance for a *Semasia*; a little further on, there was a boulder by the side of our path, and on this were a few plants of *Asplenium septentrionale*, in gathering these we found *Pachetra leucophæa* asleep, the only *Noctua* except *Euclidia glyphica* taken by us in the district. Our path led us to the summit of the vine-clad hill which overlooks Königswinter, and just as we came to the cross opposite the cemetery, a beautiful *Eupæcilia ambiguella* was captured, but unfortunately crushed in the process of boxing. Soon after we came to our resting place the rain began, and it poured down steadily all night, and during almost the whole of the next day, without intermission.

On the 12th, however, under the shelter of a vast umbrella, we went out to see how a large *Vanessa* larva which we had noted as hung up by the tail to a garden wall was getting on, we secured him just as he had changed, and another pupa near. This last produced *Vanessa polychloros* since our return home; under the wall we found many cocoons of, as we thought, *Cerostoma xylostella*, some of these were taken, and two of *C. persicella* appeared from them subsequently, the others being ichneumonized.

The 13th was a cloudless day, the sun shining most brightly, and the heat intense, enough indeed, to make us feel more than lazy; it quite changed the aspect of the woods, there was no beating required to dislodge the insects, the air was teeming with life, the beetles were chiefly Longicorns, the smaller chafer and *Chrysomelidæ*: amongst the Longicorns was a very pretty *Clytus*, black, saving a white longitudinal spot near the base of each elytron, almost surrounded by a curved white line; rather below the middle of the elytra was another transverse white line broader towards the centre, and the apex was also white. Amongst the flies was a large *Empis*? with the basal half of the wing deep black; *Syrphidæ* were scarce, but there were some handsome *Otenophori* in the wood: *Tenthredinidæ* and the smaller *Hemiptera* were abundant.

We went up our usual path, and when we came to the first wood, an *Arctia villica* made us leave our route and diverge through

the bushes ; we here captured a fine *Æcophora grandis*, either disturbed by us, or else flying in the sunshine ; we soon came upon the well-known "Stones under the Wolkenberg," so plainly seen from the Rhine Banks, and here was a sight very glorious to an English entomologist. *Aporia crataegi* was sailing about in abundance, a female was fluttering around a pomaceous shrub (probably *Aronia rotundifolia*), on which she evidently intended to lay her eggs ; whilst we were securing some of these as trophies, a lovely *Podalirius* flew calmly over our heads, quite out of reach, but distinct enough to note every marking in its wings ; a male *Satyrus Mæra* was settling on the most inaccessible part of the rock, whilst a little agile lizard was peering out from a crevice and looking on at my vain endeavours to capture it. *S. Mæra* is very like *Megæra* in its ways, but stronger on the wing, and a finer insect. Close by this spot we also took *Melitæa Dictynna*, which we afterwards saw several times, and our only specimen of *Melitæa Artemis*, a female much worn, and of the light southern form. We returned through the wood to the broom plants, at the beginning of the hilly field, and here a very much wasted specimen of *Thecla rubi* was caught, also, hovering over the clover blossoms in the field, *Sesia bombyliiformis* (the narrow bordered) and *Callimorpha jacobææ*, which was met with again during the day, fluttering lazily under the bushes.

Instead of going on to the Drachenfels, we went through the farmyard on the left, and passed on towards the Wolkenberg through rather a dense wood ; we rested in almost every inviting spot, and thus went by easy stages to the top ; the only insects we captured that are not hitherto recorded were *Melanippe tristata*, which was frequent, *Satyrus Aegeria*, one wasted specimen ; some larvæ of *Gonepteryx rhamni* on *Rhamnus frangula*, and a *Glyphipteryx*, probably *equitella*, as *Sedum album* and *Sedum rupestre* were abundant ; one was taken as an example, but the pill-box was unfortunately lost ; *Sericoris lacunana* was also noted as common ; two of *Glyphipteryx Bergstræssella* were taken in one shady little dell within the wood. On our reaching the summit of the Wolkenberg, *Satyrus Mæra* was common, and in addition, two examples of a very handsome *Phycis* (*Ancylosis cinnamomella*) were taken, flying amongst the loose stones. In our descent, no fresh *Lepidoptera* occurred to us except *Sericoris urtica*.

An evening's stroll by the Rhine banks concluded our visit to Königswinter, and we then set our faces towards England.

The following is a classified list of the *Lepidoptera* taken by us amongst the Siebengebirge :—

<i>Papilio Podalirius</i> ,	<i>Ephyra omicronaria</i> ,	<i>Anchylopera biarcuana</i> ,
<i>Gonepteryx rhamni</i> ,	<i>Acidalia incanata</i> ,	„ <i>Lundana</i> ,
<i>Aporia crataegi</i> ,	„ <i>remutata</i> ,	<i>Argyrotoza Conwayana</i> ,
<i>Lasiommata Mægera</i> ,	„ <i>aversata</i> ,	<i>Roxana arcuella</i> ,
„ <i>Mæra</i> ,	<i>Fidonia atomaria</i> ,	<i>Stigmonota compositella</i> ,
„ <i>Ægeria</i> ,	„ <i>limbaria</i> ,	<i>Grapholitha hypericana</i> ,
<i>Cœonympha Pamphilus</i> ,	<i>Minoa euphorbiata</i> ,	<i>Cnephasia hybridana</i> ,
<i>Vanessa polychloros</i> ,	<i>Emmelesia albulata</i> ,	<i>Sericoris lacunana</i> ,
<i>Melitæa Dictynna</i> ,	<i>Eupithecia</i> — ?	„ <i>urticana</i> ,
„ <i>Artemis</i> ,	<i>Melanippe tristata</i> ,	<i>Eupœcilia nana</i> ,
<i>Thecla rubi</i> ,	<i>Campogramma bilineata</i> ,	„ <i>ambiguella</i> .
<i>Chrysophanus Dorilis</i> .	<i>Eubolia mœniata</i> ,	—
—	„ <i>bipunctaria</i> ,	<i>Talæporia pseudo-bombycella</i>
<i>Procris statices</i> ,	„ <i>plumbaria</i> .	<i>Adela fibulella</i> ,
<i>Anthrocera loniceræ</i> ,	—	<i>Micropteryx Seppella</i> ,
<i>Smerinthus populi</i> ,	<i>Rivula sericealis</i> ,	<i>Hyponomeuta evonymella</i> ,
<i>Sesia bombyliiformis</i> ,	<i>Pyrausta punicealis</i> ,	<i>Cerostoma persicella</i> ,
<i>Trochilium tipuliforme</i> .	<i>Botys fuscalis</i> ,	<i>Gelechia aleella</i> ,
—	<i>Ancylosis cinnamomella</i> ,	„ <i>triparella</i> ,
<i>Pygæra bucephala</i> ,	<i>Crambus chrysonuchellus</i> ,	<i>Hypsolophus fasciellus</i> ,
<i>Hypogymna dispar</i> ,	„ <i>pratellus</i> ,	<i>Pleurota bicostella</i> ,
<i>Dasychira pudibunda</i> ,	„ <i>hortuellus</i> .	<i>Harpella Geoffrella</i> ,
<i>Cybosia mesomella</i> ,	—	<i>Cecophora grandis</i> ,
<i>Hypercompa Hera</i> ,	<i>Antithesia pruniana</i> ,	„ <i>Lambdella</i> ,
<i>Arctia villica</i> ,	<i>Lithographia campoliliana</i> ,	<i>Butalis Scopolella</i> ,
<i>Callimorpha jacobææ</i> ,	„ <i>Penkleriana</i> ,	<i>Acrolepia cariosella</i> ,
<i>Fumea nitidella</i> ,	<i>Phlœodes tetraquetra</i> ,	<i>Glyphipteryx Bergstraessella</i>
<i>Pachetra leucophæa</i> ,	<i>Dicrorampha Petiverella</i> ,	<i>Argyresthia curvella</i> ,
<i>Cosmia trapezina</i> ,	„ <i>plumbagana</i> ,	<i>Coleophora laricella</i> ,
<i>Euclidia glyphica</i> .	„ <i>cinerosana</i> ,	<i>Tischeria complanella</i> ,
—	„ <i>agilana</i> ,	<i>Cemiostoma spartifoliella</i> .
<i>Epione advenaria</i> ,	<i>Coccyx hyrciniana</i> ,	—
<i>Venilia maculata</i> ,	<i>Anchylopera ramella</i> ,	<i>Pterophorus pentadactylus</i> .
<i>Ephyra punctaria</i> ,	—	—

With the exception of thirteen species, all are British; and, making allowance for a few common insects that were not taken, and (this is mentioned as a warning to others) that I am now afraid to record from memory only, it will give us an average of about twelve species out of a hundred, not found in our islands.

For the names of many of these *Lepidoptera*, and for the careful examination of them all, I am indebted to my friend Mr. Stainton, at whose hospitable house I spent a few days at the close of this, the only holiday which I have had from work since my brief stay amongst the insects of south Devon in 1865.

Note on two species of Anisotoma new to the British Lists.—(?) *ANISOTOMA GRANDIS*, Fairm. et Lab., Faune Ent. Franç., I, p. 316. I have long had in my collection three specimens of a large *Anisotoma* (taken by myself, by sweeping in Sept., 1863, at dusk, among long grass, &c., under trees at the top of the "Hilly Field," Mickleham, Surrey) which I have never been able satisfactorily to refer to any recorded species, or to consider sufficiently distinct from *A. cinnamomea*, which also occurred to me at the same locality. My attention, however, having been recently drawn to the allies of the latter species, I find that one at least of the three specimens above mentioned (a ♀) agrees well enough with the description of *A. grandis*, differing as it does from *cinnamomea* in its rather lesser size (it slightly exceeds two English lines in length) and convexity; in its entirely rufous antennæ, of which the club is not quite so large or compact, with the 2nd joint not quite so small or transverse; in its thorax, when viewed from the front, not being so contracted behind, and with its anterior contraction less abrupt, more rounded, and beginning above the middle, and its anterior angles much less evident, being rounded off; and in the interstices of the striæ of its elytra being evidently punctured.

The two other specimens, which are smaller ($1\frac{3}{4}$ lin.), exhibit the clear rufous club and other characters, with the exception of the interstitial punctuation, which is much as in *cinnamomea*. These two appear to be males, having their flattened hind femora terminated by a very slight angular point, with no vestige of other denticulation, and their hind tibiae very slightly curved.

The smaller size, flatter appearance and less oblong build of these three specimens, and their light antennæ and differently shaped thoracic outline, certainly give them a considerably different facies from even the smallest *cinnamomea*; and I am induced to bring them forward as *A. grandis* (though with some doubt), as the publication of these observations may bring to light other examples. There is, I think, another specimen in Mr. Oliver Janson's collection, taken near Highgate, where *A. cinnamomea* has not as yet been observed, so far as I know.

(?) *ANISOTOMA OBLONGA*, Erichson, Ins. Deutschl., iii, p. 53, note. I have also had for some time in my collection an example of another large *Anisotoma*, kindly given to me by its captor, Mr. J. T. Harris, of Burton-on-Trent, and which Dr. Kraatz returned to me early this year as probably the *A. oblonga* of Erichson. Having recently seen another specimen, beaten off broom in a wood near York by Mr. Hutchinson of that city, I now bring forward this species, also with some little doubt, but still with perfect certainty that it is a good species, and not referable to any other in our list.

Compared with *cinnamomea*, these insects are rather smaller (nearly $2\frac{1}{4}$ Engl. lines), distinctly less oblong and more ovate, with the antennæ shorter and entirely rufo-testaceous, the sides of the thorax less abruptly contracted in front, and with more rounded anterior angles; the elytra shorter and wider, with the punctures of the striæ stronger, and of the interstices more evident, the larger punctures in the alternate interstices being larger and more numerous; and the legs shorter.

Both of the above mentioned specimens, as are those referred to by Erichson, appear to be females, having the hind femora rounded beneath at the apex.

Compared with the insects above brought forward as probably *A. grandis*, these

specimens are broader and shorter, with the antennal club not quite so strong, and with its second joint shorter and more transverse; the three joints preceding the club more transverse; and the punctures of the striæ of the elytra, and the larger interstitial punctures, stronger. The fourth stria, also, appears to be slightly sinuous about the lower third. The hinder femora, moreover, differ from those of the ♀ of my supposed *A. grandis* in being rounded off beneath, whereas in that insect they are distinctly angulated.—E. C. RYE, 10, Lower Park Fields, Putney, S.W., December, 1870.

On a variety of Philonthus xantholoma.—Some time ago, while examining series of *Philonthus xantholoma* and *P. fucicola*, I was surprised to find specimens which appeared at first sight to be intermediate between the two species. A slight comparison, however, showed them to be quite different from *fucicola*, by their possessing a variegated hind-body,* and a pale margin to the elytra. These specimens differ from *xantholoma* by being larger, by possessing a very large and very variously punctured head, by the thorax being narrowed behind, and the under-face of the hind-body sparingly and coarsely punctured. This last character is so striking that I supposed the specimens possessing it to be a distinct species from *xantholoma*, till a letter from Mr. Rye induced me to look at my examples again, when, on un-mounting all of them for examination, I found all to be males. These males differ strikingly from ordinary males of *xantholoma*, by the characters mentioned above. Though the size and development of the head varies considerably in these individuals, the punctuation of the under-face of the hind-body remains constantly quite different from that of ordinary ♂ *xantholoma*. In the absence of any females, however, these cannot be looked on as a distinct species; and it would appear that *P. xantholoma* is a species possessing two distinct forms of the male sex, one resembling the female in all points, and distinguished therefrom only by the emargination of the sixth and seventh segments, and the other differing by the characters mentioned above. Should it be thought well to give a distinct name to this remarkable variety, it may be called *P. variolosus*. This form is, according to my experience, much rarer than ordinary *xantholoma*, though I have found it at various places on the coast in England and Scotland. The large headed males from Berwick, alluded to by Kraatz in the *Ins. Deutsch.*, ii, p. 596, are no doubt to be referred to it; as is also the figure of *P. xantholoma* in Du Val's *Genera*.—D. SHARP, Eccles, Thornhill, Dumfries, December, 1870.

Note on Trogophlæus bilineatus, Steph.—There is a confusion existing as to this species which requires correction. In his *Illustrations*, Stephens describes and figures, under the name *Carpalimus bilineatus*, an insect beyond question the *T. riparius* of Lacordaire and Erichson; and this name, having priority, must be adopted. Erichson, misled by a specimen of another species sent by Spence as *bilineatus*, described under that name another species, and it becomes necessary, therefore,

* Although it is customary, when speaking of this part in the *Brachelytra*, to call it the abdomen, this is clearly a mistake. Though there may be some reason for speaking of the under-surface of the hind portion of the body among the *Coleoptera* as the abdomen, there can be none for calling by that name the exposed dorsal portion of the hinder segments. The Germans use the word "*Hinterleib*" for the part we speak of as abdomen; and it would perhaps be an improvement if we were to use the equivalent "hind-body," or some such word. If any one can suggest a better name than this, I shall be much obliged to him.—D. S.

to find a new name for Erichson's *bilineatus*. v. Harold gives *obesus*, Steph., as synonymous with *bilineatus*, Erichson; but Stephens' description of *Carpalimus obesus* is certainly not applicable to the species in question; for which I therefore propose the name of *Erichsoni*.

The synonymy will then be—1. *T. BILINEATUS*, Steph.

riparius, Lac., Er., Kr.

2. *T. ERICHSONI*, Sharp.

bilineatus, Er., Kr.

Id.

Note on Trogophlæus foveolatus, Sahlb.—The three specimens of *Trogophlæus foveolatus* mentioned by Mr. Rye in the last No. of this Magazine, as having been shown to him by Dr. Power, were taken by me on the Kent Coast, at Whitstable, in March, 1869. I found them in tidal refuse, in company with *T. tenellus*; but, although I have frequently visited the locality since, I have not again met with the species.—G. C. CHAMPION, 274, Walworth Road, S.E., 8th December, 1870.

Oncomera femorata at Silverdale, near Lancaster.—When sugaring last September at Silverdale, near Lancaster, I took several specimens of both sexes of the above named beetle, which were attracted by the repeat. As this appears to be a new locality for the insect, possibly its capture there will interest Coleopterists. Silverdale is situated on the limestone tract which separates the chief part of Lancashire from the lake district.—FRANK ORDE RUSPINI, Fulshaw Farm, Wilmslow, Cheshire.—2nd December, 1870.

On a collection of insects from the neighbourhood of the Cheviot Hills.—Having in June and again in the end of September and beginning of October (1870) devoted some days to the exploration, entomologically, of the hilly district round Wooler in Northumberland, inclusive of Cheviot and Hedgehope, I wish to make known the results; several of the insects obtained being new to that part of the country, or otherwise from their distribution or rareness having some special interest. My friend Mr. Bold has assisted me with the naming and arrangement. For other particulars, I must refer to Mr. Bold's revised "Catalogue of the *Coleoptera* of Northumberland and Durham," or to a paper drawn up by myself for the Berwickshire Naturalists' Club. Owing to rain and misty weather, Cheviot itself has been but partially examined, on this occasion; but it is to be hoped that, in some subsequent season, it may be overtaken, and no longer be regarded as a *terra incognita*.

COLEOPTERA.

Banks of streams, pools, &c.:—*Bembidium monticola*, *decorum*, *punctulatum*, *Schuppellii*, *paludosum*; *Bradycellus placidus*, Till-side; *Tachyusa constricta*, *scitula*, *flavitaris*; *Homalota curraw*, *insecta*, *cambrica*, *elongatula*, *graminicola*, *succicola*, *subænea*, Sharp, *fungi*; *Gymnusa variegata*, among grass at the mouth of a rivulet; *Philonthus umbratilis* and *rubripennis*, *Bledius subterraneus*, *Heterocerus marginatus*; *Stenus guttula*, *impessus*, *nitidiusculus*; *Psylliodes napi* on *Carlamine sylvatica*; *Choleva grandicollis*, *Kirbii*, *coracina*, *tristis*, *morio* and *Watsoni*.

On heaths and in mossy places in bogs, &c.:—*Dromius nigriventris*, shaken out of heather; *Bradycellus collaris* and *similis*; *Trechus minutus* and *obtus* (both also on Cheviot), *Hydroporus monticola* and *parallelus*, Sharp, and *obscurus*; *Myllæna elongata* (also by sides of hill streams); *Lathrobium quadratum*, *Lesteva punctata* (also in marshes), *Hypocyptus laviusculus* and *anisotomoides*, *Tachyporus transversalis*, *Mycetoporus lepidus*; *Stenus brevicollis* and *buphthalmus*, *Helodes marginatus*, *Telephorus paludosus*, *Prasocuris beccabungæ*, *Graptodera longicollis* (♂ and ♀, but mostly ♀).

In fungi, agarics, &c., and also from woods, mostly of old alder:—*Bembidium Mannerheimii*, Wooler-water; *Autalia impressa*, *Bolitochara lucida* (beneath *Polyporus versicolor*); *Leptusa fumida* and *ruficollis* in tree fungi; *Oxyypoda spectabilis*, marsh under alder; *O. alternans*, plentiful in agarics; *Gyrophæna gentilis*, between gills of agarics; *Myllæna brevicornis*, marshes; *Phleopora reptans*, under bark of Scotch pine; *Homalota pavenis*, *volans*, *aneicollis*, Sharp, *xanthoptera*, *vicina*, *picipes*, *fungicola*, *occulta*, *ignobilis*, Sharp (plentiful), *sodalis*; *Tachinus proximus*, dark glen in the hills; *Quedius umbrinus*, marshes; *Philonthus succicola*, agarics; *Syntomium æneum*, moss; *Olophrum piceum*, *Lathrimæum atrocephalum* and *unicolor*, marshes; *Deliphrium tectum*, *Homalium vile*, *H. Allardi*, *H. exiguum* (base of alder fungi), *H. abietinum* (under bark of stumps of Scotch pine), *H. brevicorne* (eight specimens, about the base, and between it and the bark, of fresh growing specimens of *Polyporus radiatus*, on alder, near Langlee, in Wooler-water, and on the Lill Burn); *Sphærites glabratus*, from the centre of a decayed *Boletus luteus*, in dark glen on the hills; *Choleva longula* and *tristis*; *Omosita depressa*; *Cryptophagus dentatus*, curious high-coloured varieties; *C. pilosus*, fungus of alder; *C. scanicus*, in dry agarics; *Rhizophagus depressus*, *dispar* and *bipustulatus*, in agarics on trees, as well as under bark. *Mycetophagus multipunctatus*, in the corky fungus of the alder (*Polyporus radiatus*); new to Northumberland, and, I suppose, to the north of England: it occurred to me in several localities. *Triplax ænea*, with the preceding, but less numerous; occasionally on tree agarics also, and on the oak as well as the alder: about its northern boundary on the east side of the island. *Cis boleti* and *festivus*, on *Polyporus versicolor* and *P. vulgaris*; *Salpingus foveolatus*, base of *Polypori*; *Orchesia micans*, on *Polyporus radiatus* of the alder, in various localities. *Carida flexuosa* (which formerly I had both taken and bred from this fungus, gathered in this vicinity), did not occur on this occasion. *Lathridius nodifer* and *minutus*, from dried-up agarics growing upon and beneath alders; the first locally numerous.

From the hills:—*Carabus nitens*, high moors at Broadstruther; *Patrobus excavatus*, plentiful on Cheviot and Hedgehope up to the summits (no trace of the Scottish mountain species *P. assimilis*); *Calathus melanocephalus*, Cheviot and Hedgehope up to the summit, nearly all were of the dark mountain variety; *C. micropterus*, Cheviot and Hedgehope; *Anchomenus fuliginosus*, Cheviot; *Pterostichus orinomus*, top of Cheviot; *P. æthiops*, in the Bizzle, Cheviot; *Amara lunicollis*, in Henshole, Cheviot; *Bradycellus cognatus* and *collaris*, Cheviot and Hedgehope; *Autalia puncticollis*, Sharp, in Dunsdale, Cheviot (1869); *Ocalea badia*, one in a birch fungus (*Polyporus betulinus*), in Goldsleugh wood, Cheviot; *Oxyypoda rupicola*, Rye, Cheviot; *Homalota clavipes*, Sharp, Henshole, Cheviot, also Hedge-

hope; *H. tibialis*, Cheviot and Hedgehope; also in a moss near Wooler; *Homalota curtippennis*, Sharp, Henshole; *H. eremita*, Rye, Cheviot, also from a peat moss near Wooler; *H. gregaria*, *longicornis*, *atramentaria*, *fungicola* and *elongatula*; also from Cheviot. *Tachinus laticollis*, Cheviot (1869); *Quedius semicaneus* and *Q. fulvicollis*, Cheviot; *Philonthus procerulus*, Henshole in Cheviot; *Othius leviusculus* and *myrmecophilus*, Cheviot; *Stenus brevicollis*, *fulvicornis* and *latifrons*, Henshole; *Otiorhynchus maurus*, in bilberry plots, up to the top of Cheviot; also on apex of Hedgehope in October; also on tops of lower hills where bilberries grow. *Anthophagus alpinus*, half-way up Cheviot; usually under stones at the top of that hill, and Hedgehope. *Arpedium brachypterum*, Henshole; also at the tops of Cheviot and Hedgehope. *Aphodius subalpinus*, all over the Cheviot, and at the top; *A. putridus*, rarer, Dunsdale. *Cryptophagus setulosus*, under heath, rather high up, Cheviot. *Corticaria fuscula*, Cheviot and Henshole, and peat moss near Wooler, among grass and bent. *Mniophila muscorum*, by shaking moss, Henshole, Cheviot.

I may also mention *Agabus arcticus* and *A. congener*, found in a pool on Hedgehope, some years since; and *Carabus glabratus* in the Bizzle, Cheviot.

HEMIPTERA.

Sphyrrocephalus ambulans and *Nabis apterus*, on Cheviot; *Salda stellata*, *pallipes* and *saltatoria*, by stream-sides; *Scolopostethus affinis*, plentiful on heather; *Dipsocoris alienus*, among gravel of hill burns; *Pantilius tunicatus*; *Peritrichus luniger*, *Trapezonotus agrestis*, *Dryinus sylvaticus*, *D. brunneus*, *Stygnocoris sabulosus*, mostly in moss, in alder woods; *Ætorhinus angulatus*, alder.

HOMOPTERA.

Liburnia limbata, *L. discolor*, *Ulopa obtecta*, *Idiocerus populi*, *I. fonticola*, *Acocephalus bifasciatus*, *Aphrophora alni*, *Iassus mixtus*, *I. sennotatus*.

Of the *Anthophila* I observed *Andræna extricata*? (♂) and *A. cingulata*; *Sphecodes ephippia*, *Colletes succincta*, *Halictus rubicundus*, *tumulorum* and *aratus*.—JOHN HARDY, Old Cambus by Cockburnspath, N.B., November 14th, 1870.

Notes on captures of Hemiptera-Heteroptera during 1869 and 1870.—During the past two seasons, I have collected all the species of *Hemiptera* that I came across; and, as they include several rare species, I have thought that a few notes on them would not be uninteresting.

Amongst others, the following species have occurred to me:—*Schirus dubius*, Scop.; rarely, in moss, under junipers on the chalk downs near Croydon, in the winter months. *Corimelana scarabæoides*, Lin.; commonly, at Mickleham, in moss, in April; also at Darenth. *Sciocoris terreus*, Sch.; on the sand-hills at Deal, rather common; May and July. *Alia acuminata*, Lin.; Darenth Wood, by beating in June and July. *Ælioides inflexa*, Wolff; rather common, at Shirley, Mickleham and Darenth, by sweeping in May. *Eysarcoris æneus*, Scop.; not rare, in the New forest, at Lyndhurst, by sweeping in grassy places in the young plantations; July. *Zicrona corulea*, Lin.; common in moss, on the chalk downs at Croydon and Mickleham. *Rhacognathus punctatus*, Lin.; a few specimens at Shirley and Leith Hill, in moss amongst heath; April and September. *Asopus luridus*, Fab.; Darenth and Mickleham, by beating in May and June; a few specimens. *Choro-*

soma Schillingii, Sch.; on the sand-hills at Deal; September. *Stenoccephalus agilis*, Scop.; Darenth Wood, commonly, by sweeping low plants in May and June. *Metacanthus puncticeps*, Germ.; commonly, by sweeping *Ononis spinosa*, at Betchworth; September. *Berytus Signoretii*, Fieb., in moss, Betchworth, April; *B. crassipes* and *B. minor*, H. S., in sand-pit at Shirley, April; *B. commutatus*, Fieb., in moss, Forest Row, Sussex, September. *Neides tipularius*, Lin.; of this rare species I have taken four specimens, in moss, on Box Hill, in October. *Plocimomerus fracticollis*, Sch., in stack refuse, Wicken fen, August. *Calyptronotus lynceus*, D. & S., on the sand-hills at Southend, one specimen, in July. *C. pedestris*, Panz.; in sandy places; Dartford and Southend; June and July. *Eremocoris erraticus*, Fab., in moss on Box Hill; May and September. *Tropistethus holosericeus*, Scholtz; three specimens, in moss under junipers, at Mickleham; April. *Stygnocoris rusticus*, Fall.; in moss, Reigate; September. *Acompus luridus*, Wolff; rather commonly in Wicken fen, in stack refuse; August. *Henestaris laticeps*, Curt.; in sandy places on the coast, at Whitstable, amongst sea-thrift; June. *Ischnorhynchus resedæ*, Panz.; by sweeping at Darenth in June. *Zosmerus quadratus*, Fieb.; commonly on the coast at Southend, amongst grass, &c.; September and May. *Monanthus simplex*, H. Sch.; by sweeping at Darenth Wood in July and August. *Pithenus Mörkeli*, H. Sch.; Weybridge, by sweeping in July. *Deracocoris ticinensis*, Mey.; sparingly, by sweeping in Wicken fen; August. *Macrocoleus solitarius*, Mey.; by sweeping at Sevenoaks, Kent; July. *Amblytus affinis*, Doug. & Scott; by sweeping at Weybridge in July. *Haplomachus Thunbergii*, Germ., and *Conostethus roseus*, Fall., by sweeping at Weybridge in July. *C. griseus*, Doug. & Scott, in profusion, in a salt marsh at Whitstable, on and under *Artemisia maritima*, in June. *Halticocoris pallicornis*, Fab.; by sweeping at Betchworth in July. *Anthocoris srothamni*, Doug. & Scott; on broom at Weybridge; July. *Xylocoris ater*, L. Duf.; under bark, Croydon. *Salda pulchella*, Curt., and *S. littoralis*, Lin., commonly, in a salt marsh at Whitstable, in June. *Ploiaria vagabunda*, Lin., in débris of fern, Darenth Wood; October. *Coranus subapterus*, Do G.; by sweeping heath at Leith Hill; September. *Hydrometra argentata*, Schum.; Wicken fen, in August. *Corixa affinis*, Leach, Gravesend, May; *C. præusta*, Fieb., Lee, April; *C. limitata*, Fieb., Tilgate Forest, May.

I am indebted to Messrs. Douglas & Scott for assisting me in determining most of the above species.—G. C. CHAMPION, 274, Walworth Road, S.E.

Late larvæ of Pieris brassicæ.—At the beginning of the present month, the cabbages in our garden were covered with broods of the larvæ of *Pieris brassicæ* in various stages of growth. The cold nights and frosts that prevailed at that time were fatal to a few of them, but the bulk escaped, and the present mild weather has greatly favoured them. Should it continue, many will be ready in a few days to assume the chrysalis state.

Yesterday, the warm genial day had a marked effect upon them, and I noticed them feeding voraciously or basking in colonies in the warm rays of the sun.

It will take yet a few weeks for the whole to attain their full growth; and, should the weather continue mild, the unwonted sight of larvæ of the common white butterfly in a state of nature near Christmas will be observable.

I will give you the subsequent history of the remaining broods. Some brought into the house a week since were yesterday commencing to spin up.—J. C. MILLER, Lime Farm House, Eltham, 28th November, 1870.

Transformations of Lycæna Alsus.—For some time past, Mr. J. Gedge's note on this species, which was published in Vol. iii, E.M.M., at p. 205, had been tempting Mr. Buckler and myself to try to rear it from the egg, and during the past season we have put our plan into execution.

Several imagos, captured in Hampshire about June 15th, were sent on to me; I placed them on a plant of *Anthyllis vulneraria* in a large cylinder, and, although they died off rapidly, one female at least survived to lay about a dozen eggs, June 16th–18th; the larvæ began to hatch on the 21st, and at once took to the flowers of *Anthyllis*, either eating a hole through the downy calyx, and then through the corolla to the immature seed-vessel; or else beginning by eating some of the lip of the corolla, and then going down to the base of the style. From first to last the seed certainly was the part preferred, and whilst the larvæ were small they fed on it hidden within the corolla; when they had attained some size, they pierced the side of the calyx and corolla, and thrust in the forepart of their bodies to get at the seed-pod with its single seed, leaving their hinder parts outside, but still well hidden among the dense bunch of flowers which formed each head.

By July 1st, they were barely half-grown, but in the next fortnight they developed rapidly, some of them by the 13th having attained the length of a quarter of an inch, and soon after this the most advanced were full-grown: others, captured in the locality from which the imagos came, were not so far advanced, but most of these also had ceased feeding by the end of July: they then placed themselves about on the gauze covers of their cages, or on the under-side of anything in the cages that would hide them, and we expected to see them change to pupæ. However, up to the date of writing of this no such change has taken place, but those larvæ, which have not died, are waiting on quietly, and I suppose will not now turn to pupæ till spring.

The egg seemed generally to be deposited low down on the calyx of the *Anthyllis* flowers, and though thus hidden from casual observation, it may be easily detected on a careful search: it is, as might be expected, very small, shaped like the eggs of its congeners, namely, round, but more flattened than globular, with a central depression on the upper surface: this depression is the only place in which the pale green ground colour of the egg can be well seen, because the rest of it is closely covered by a raised white network of rhomboidal meshes, which, when viewed in profile, are seen to stand out boldly from the shell.

The larva escapes by an irregular hole in the middle of the upper surface of the egg, and is a mite of a fellow to look at, dirty whitish-green in colour, with a little black head, a dark place on second segment, and the tubercles bearing longish hairs: after a day or two the colour becomes somewhat reddish, and at the end of a week pale brown, with browner dorsal and sub-dorsal lines. After this there begins to be a little variation in colour in different individuals, some being more of a pinkish-brown, others more of a chocolate colour, the distinct dorsal stripe being of a deeper tint of the ground colour, and commencing as a broad triangular mark on the third segment, and becoming gradually narrower up to the eleventh, where

it widens out into a lozenge shape, contracting again to a narrow stripe on the twelfth and thirteenth : the tubercles show paler than the rest of ground, because the brown hairs on them, being divergent, allow more of the paler skin to be seen. Just below the second row of tubercles comes the sub-dorsal line, which in fact is composed of a series of dark brown dashes, one on each segment, sloping backwards and downwards, so as to let the tubercle stand out in high relief; along the edge of the lateral ridge runs a whitish stripe, which is continued round the anal extremity; the belly and legs of same colour as the back. The whole skin is studded with short bristles of a dark brown colour; the head is black and polished, but with a streak above the mouth, and also the base of the papillæ, yellow.

After this there is no change in appearance, save that of growing paler and more unicolorous (perhaps, as the bulk increases, more of the paler skin shows between the dark bristles), until some specimens are of an ordinary flesh tint, and others of a brownish-flesh colour, and at this point the larvæ assimilate well with the changing of the corolla of their food-plant. After they cease feeding, they turn off to a faint greenish-yellow.

When full-grown the larva is about one-third of an inch long, and may be roughly compared to a moderately-sized grain of wheat cut in half, the back being arched in a curve, and the belly flat with the legs placed well under it; or it may be compared to a very tiny tortoise, the head being very small and retractile, and a lateral ridge running all round, and giving the appearance of an upper shell; the second segment is the longest, and has a sort of triangular plate on its middle, and the last three segments are slightly depressed; the inner rows of dorsal tubercles are rather projecting, and thus form between them a sort of dorsal hollow, and the second row I have already mentioned as affecting the sub-dorsal line.—JOHN HELLINS, Exeter, 9th November, 1870.

Some notes on the young larva of Deilephila galii.—My observations on the early stages (unfortunately confined to the first three stages) of *D. galii* rather differ from Mr. Buckler's. On the 9th September, 1870, my friend Dr. Buchanan White gave me a very small larva, as that of *stellatarum*, found in Kirkcudbrightshire, on the borders of the Solway Firth: it was then about five lines in length; ground colour dark green, with a broad sub-dorsal line and a sub-spiracular narrow line white, and the horn, rough, straight, black. It moulted without difficulty, about a fortnight after I got it, and emerged greatly changed in appearance.

Its length now was one inch two lines; ground colour entirely black; no dorsal line, sub-dorsal line white and very narrow, and strung on to it a row of ten large lemon-yellow spots with orange centres; sides sprinkled with minute white dots, a very narrow sub-spiracular line interrupted at each segment; three rather marked transverse raised lines on each segment; horn rough, straight, black.

This garb only lasted about twelve days, when it took to the muslin cover of its prison, and there remained without moving for five or six days, finally moulting on the 6th October, with evident discomfort: and it was merely by keeping it quite warm and in the sun that I could persuade it to eat after this moult.

It was now one inch eight lines in length; ground colour black, with the head, plate on second segment, and anal flap bright red-brown (the red-brown gradually toned down to dark brown); no dorsal line, no sub-dorsal line, only the

row of conspicuous lemon-yellow spots remaining, each having a black dot in the centre broadly margined with orange; streak across the mouth and the base of papillæ yellow. Sides spotted with clear yellow dots. Spiracles pure white, an interrupted row of small dots in place of the sub-spiracular line. Horn red-brown, slightly rough, curved outwardly. To speak more exactly, the head was black all about the mouth, and red-brown above.

On the 14th October this larva unhappily, after being extremely restless, effected its escape from some unseen aperture, and was no more heard of, and so my notes, taken from time to time while I had it, abruptly ended. The most noticeable feature to my mind is the *straight black* horn during the first two stages, as in all accounts I have seen, it is always red-brown. It fed freely on *Galium verum*, with occasionally a little *Fuchsia*.

It will be noticed how much later this larva was than those seen by Mr. Buckler: it is evidently very variable.—W. DOUGLAS ROBINSON, Christ Church, Oxford, November 1st, 1870.

Occurrence of Plusia ni at Penzance.—A few days since, Miss E. Carne, of Penzance, called to see my collection, bringing a few insects to be named. Amongst them was a *Plusia*, which Miss Carne thought might be *interrogationis*, but I saw at once it was neither that nor *gamma*, and, referring to the pages of the Ent. Mo. Mag. for the description of *P. ni* by Professor Zeller and Dr. Knaggs, was able to pronounce it as that species.

It was captured by Miss Carne in her garden at Penzance, hovering over flowers, early in the evening in May, 1869; and has been very kindly presented by her to me.—W. R. JEFFREY, Saffron Walden, November 28th, 1870.

Further specimens of Xylina conformis.—I have now on my setting board a fine ♂ and ♀ of *X. conformis*, taken November 8th and 10th; rather a late time to go out nothing.—J. B. HODGKINSON, 15, Spring Bank, Preston, November 21st, 1870.

Capture of Elachista serricornis.—I took eleven specimens of this rare species on 20th July, at Witherslack, by sweeping. I have searched morning, noon, and night, but as yet cannot find when it is on the wing; and the midges worry one fearfully whilst looking for it.—ID.

Larvæ of Exapate gelatella on Rhamnus catharticus.—I have just bred both sexes of *Exapate gelatella* from larvæ found on *Rhamnus catharticus* in May and June last. The larvæ lived in dwellings formed by drawing a leaf to a stem, or to another leaf, of the plant. So far as I am aware, the larva of this moth has not hitherto been observed to feed on the above-named plant.—J. E. FLETCHER, Pit-maston Road, Worcester, December 8th, 1870.

ENTOMOLOGICAL SOCIETY OF LONDON, 21st November, 1870. A. R. WALLACE, Esq., F.Z.S., President, in the Chair.

Mr. Bond exhibited *Fumea reticella* ♂ ♀, with cases, bred by Mr. Button; also *Actiælia strigaria*, Hüb., *Phycis obductella*, F.v.R., likewise captured by Mr. Button; new or rare British species.

Mr. Müller exhibited the larva of *Egosoma scabricorne* from the trunk of an old lime tree in Basle, blown down in March, 1868. The larvæ occurred plentifully in these trees at the locality mentioned.

Mr. F. Smith exhibited a portion of a wasps' nest from Gloucestershire infested with the dipterous *Phora flora*; in some cases twelve or fourteen larvæ of the fly were in one cell, and out of two hundred or three hundred cells not more than a dozen had escaped. Mr. Verrall remarked that he had bred a *Phora* from the body of a perfect hornet.

Prof. Westwood said he had recently bred *Phlæotribus oleæ* in numbers from the trunk of an ash-tree from Halifax; the tree had, however, been imported from France, so that the insect could, at present, not be considered as naturalized among us.

Mr. Butler read "Descriptions of Diurnal *Lepidoptera*, chiefly *Hesperidæ*," and exhibited numerous examples in illustration thereof, chiefly from the collection of Mr. Druce.

5th December, 1870. F. P. PASCOE, Esq., F.L.S., Vice-President, in the Chair.

G. H. Verrall, Esq., of Denmark Hill, formerly a Subscriber, was elected a Member.

Mr. E. Saunders exhibited three new British species of *Hemiptera-Heteroptera*, viz., *Salda arenicola*, *Plociomerus luridus*, and *Hadrodema pinastri* (see p. 156); also several closely allied species of *Strachia*, in proof of his assertion that Messrs. Douglas and Scott in their work had confused the synonymy of several European species.

Mr. Butler exhibited a dwarfed example of *Vanessa urticæ* recently bred, being the solitary exception out of a brood of larvæ, which had produced perfect insects of the ordinary size.

Mr. F. Smith exhibited, on behalf of Mr. Champion, specimens of *Calodera rubens* from Lewisham, and *Baridius scolopaceus* (see p. 107).

Mr. Pascoe exhibited two remarkable Longicorn beetles captured by Capt. Lang in North India; one having the facies of a South American species of *Sphæron*, the other being a *Cerambyx* with the facies of *Dorcadion*.

Mr. Müller exhibited photographs of galls of *Cynipidæ* on various species of North American oaks sent by Mr. Bassett; also of other species (*Rhodites*) on roses, from the same quarter.

Mr. S. S. Saunders exhibited a living specimen of a fine spider from Greeco—*Eresus ctenizoides*. It was found at Syra beneath stones.

Mr. F. Smith mentioned that when in Devon recently he had observed a species of *Ailus* (*albiceps*, Meigen) feeding upon grass-hoppers.

The Rev. A. E. Eaton communicated "A Monograph on the *Ephemeridæ*," part i. This is an elaborate and exhaustive work on this difficult family, the result of several years almost exclusive attention to the group. He enumerated about 178 known species, some of which were not in a satisfactory state so far as regards a clear appreciation of their positions as given in the original descriptions.

ON CERTAIN BRITISH HEMIPTERA-HOMOPTERA.

(Revision of the Family *Cixiidae*).

BY JOHN SCOTT.

(Continued from page 148).

Species 5.—*CIXIUS CONTAMINATUS*.

Flata contaminata, Germ., Mag., iii, 196, 7 (1818); Thon Archiv., ii, 49, 29 (1829).

Flata albicincta, Germ., Mag., iii, 199, 9 (1818).

Cixius contaminatus, Burm., Handb., ii, 157, 4 (1835); Flor, Rhyn. Liv., ii, 24, 2 (1861); Marshall, Ent. Mo. Mag., i, 155, 2 (1864); Kirschb., Cicad., 49, 9 (1868).

Cixia albicincta, Burm., Handb., ii, 158, 6 (1835).

Head black, keels broadly pale brownish-yellow. *Face* brownish-yellow. *Elytra* almost invariably with three short black streaks along the anterior margin, and a short transverse fuscous streak midway between the cuneate patch and the apex.

Thorax: *pronotum* clear brown, or brown, or brownish-yellow; on the sides between the keels and the posterior margin, narrowly black. *Scutellum* black, keels and the side margins more or less reddish-brown. *Elytra* pale, greyish or dark grey, granules on the interior nerves somewhat minute, thickly disposed and placed irregularly, generally in pairs, sometimes placed from left to right, sometimes from right to left, and with an occasional single granule between them, towards the apex; anterior margin almost constantly with three short black streaks, from the first of which a more or less distinct brown band passes across to near the apex of the clavus; cuneate patch brown, in which is a few black granules; and midway between this and the apex is a short transverse fuscous streak. *Wings* pale, nerves piceous. *Legs* yellow, or with a fuscous shade; *thighs* pitchy-black.

Abdomen black; *genital segment* in the middle underneath, "claspers," &c., yellowish. Length, 2—2½ lines.

In the variety *albicincta*, the inner longitudinal half of the elytra are dark brown, the outer half pale, with the usual specific characters.

This is our smallest species, and is at once to be recognised from all the others by the three short black streaks on the anterior margin. The dark grey form, on first sight, very much resembles *stigmaticus*.

Widely distributed, although the varieties appear to be confined to the south. It occurs from June to September, on various trees and bushes.

C.

Species 6.—CIXIUS STIGMATICUS.

Flata stigmatica, Germ., Mag., iii, 199, 8 (1818) ; Thon Archiv., ii, 49, 30 (1829).

Cixia stigmatica, Burm., Handb., ii, 157, 5 (1835).

Cixius musivus, Marshall, Ent. Mo. Mag., i, 155, 3 (1864).

Cixius stigmaticus, Kirschb., Cicad., 47, 4 (1868).

Elytra without bands, and the marginal nerve without united granules ; dark grey or brownish-grey, with several irregularly disposed, and more or less confluent, darker spots.

Head : crown, face, and clypeus black, keels clear brownish-yellow.

Thorax : pronotum ferrugineous, sometimes piceous between the keels. *Scutellum* black, keels somewhat prominent, side margins, at the base, brown. *Elytra* : nerves somewhat whitish, granules thickly disposed, generally along the top of the nerves, but sometimes slightly inclined, in pairs, from left to right towards the apex ; cuneate patch brown, more or less distinct, transverse nerves black. *Wings* pale grey, darker towards and at the apex, nerves dark brown or black. *Legs* yellow ; *thighs*, 1st and 2nd pairs black, 3rd more or less dark piceous, apex narrowly yellow ; *tibiae*, 1st and 2nd pairs with a narrow blackish ring near the base ; *tarsi*, 3rd joint of the 1st and 2nd pairs black, 3rd pair, 3rd joint, brown.

Abdomen black, side margins narrowly bright orange-red ; *genital segment* black, "claspers," &c., fuscous-yellow. Length, $2\frac{1}{4}$ — $2\frac{1}{2}$ lines.

Somewhat larger than *contaminatus*, with larger granules, and without the three short streaks along the anterior margin, so characteristic of that species.

Apparently not common, although widely distributed. I have seen specimens from Inverness-shire (Dr. White) and from Deal (Mr. Douglas), the latter taken amongst *Hippophæ rhamnoides*. It occurs in June and July.

Species 7.—CIXIUS SIMPLEX.

Flata simplex, H. Schf., Nom. Ent., i, 64 (1835).

Elytra pale, marginal granules elongate, somewhat thickly placed, apex between the nerves with pale fuscous spots ; *clavus*, marginal nerve, next the apex, black.

Head : crown, face, and clypeus black, keels brownish-yellow. *Eyes* brown. *Antennæ* yellowish.

Thorax : pronotum black, side keels and posterior margin pale brownish-yellow. *Scutellum* black, keels acute, side margins at the base, and at the junction with the side keels, narrowly clear brown. *Elytra* pale, somewhat opaque,

marginal nerve, as far as the black cuneate patch, white, from thence round the apex brown or fuscous, inner nerves pale yellowish-white, granules elongate, black, somewhat eye-shaped, placed at regular intervals along the top of the nerves, and somewhat more thickly disposed on the 1st and 2nd nerves of the corium, at the apex the granules are inclined to become more or less confluent; transverse nerves fine, black; apex of the claval suture, and a short streak next the junction of the nerve with the inner margin, black. *Wings* pale at the base, towards and at the apex pale fuscous, nerves piceous or fuscous. *Legs* yellow; *thighs* pitchy-black, apex narrowly yellow; *tibiae* with a narrow, piceous streak down the sides, base of all the pairs with a narrow blackish ring; *tarsi* yellow, 3rd joint of the 1st and 2nd pairs black, of the 3rd pair brown.

Abdomen black, margins of the segments above narrowly, and sides, orange-yellow or red; *genital segment* black, "claspers," &c., somewhat fuscous-yellow.

Length, $2\frac{1}{2}$ lines.

This insect is exceedingly like the following species (*similis*), and can only outwardly be distinguished from it by the different shape of the granules, their closer position both on the inner nerves and along the marginal nerve, and by the nerves being slightly more yellow.

I only know of two examples; one (a ♀) taken by Mr. Dale at Bonchurch, in October, the other (a ♂) in my own collection, without date or locality.

Species 8.—*CIXIUS SIMILIS*.

Cixus leporinus, Marshall, Ent. Mo. Mag., i, 155, 4 (1864), *nec* Panzer.

Cixius similis, Kirschb., Cicad., 49, 7 (1868).

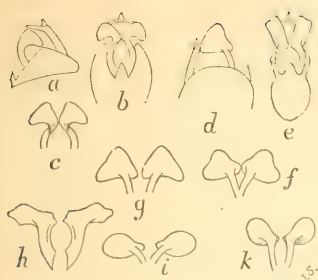
Elytra somewhat whitish, marginal granules elongate, and placed at wide intervals, all the nerves white, apex without spots between the nerves.

Head: crown, face, and *clypeus* black, keels brownish-yellow. *Eyes* brown. *Antennæ* brown.

Thorax: *pronotum* black, side keels and posterior margin pale brownish-yellow. *Scutellum* black, middle keel sometimes brown, side margins, from the base to the junction with the side keels, narrowly brown. *Elytra*: marginal nerve from the black cuneate patch round the apex exteriorly yellow, interiorly fuscous, inner nerves chalk-white, granules elongate, of almost uniform width, somewhat remotely placed along the top of the nerve; transverse nerves fine, black. *Wings* pale, transparent, nerves fuscous. *Legs* yellow; *thighs* pitchy-black, apex narrowly yellow; *tibiae* with a narrow, piceous streak down the sides; *tarsi*, 1st and 2nd pairs somewhat fuscous, 3rd joint black, 3rd pair yellow, 3rd joint yellow.

Abdomen black, margins of the segments above narrowly yellow, side margins orange-red; *genital segment* black, "claspers," &c., pale fuscous-yellow.

Length, $2\frac{1}{2}$ lines.



a. side view of genital segment of ♂ *Cixius stigmaticus*.

b. the same, viewed from beneath.

c. claspers of do.

d. side view of genital segment of ♂ *C. brachycranus*.

e. the same, viewed from beneath.

f. claspers of do

g. " ♂ *C. intermedius*.

h. " " *nervosus*.

i. " " *simplex*.

k. " " *similis*.

The more remote intervals of the granules, their difference in form, and the *chalk-white* nerves are the chief outward characteristics whereby to distinguish this species from *simplex*. The form of the genital organs of both species are abundantly distinct.

I have examined several individuals in Mr. Dale's collection, taken by him at Bonchurch, Isle of Wight, and it has also been taken by Mr. Douglas at Deal on *Hippophæ rhamnoides*, in company with *C. stigmaticus*. It appears in June, July, and October.

[Revision of the Family *Delphacidae*, and descriptions of several new species of the genus *Delphax* of authors].

(continued from p. 75).

Species 5a.—LIBURNIA PALLIDULA.

Delphax pallidula, Boh., Handl., 48, 16 (1847); Öfvers., iv, 265, 9 (1847); Stål, Öfvers., xi, 191, 6 (1854); Flor, Rhyn. Liv., ii, 44, 3 (1861); Kirschb., Cicad., 25, 11 (1868) ♀.

Developed form ♂.

Pale yellow, with a slight fuscous shade. *Elytra*: middle nerve black.

Head yellow. *Antennæ* yellow, granules brownish. *Eyes*, in life, greenish; after death, dark brown. *Ocelli* minute, black.

Thorax: *pronotum* yellowish-white. *Scutellum* ferruginous, keels more or less broadly whitish. *Elytra*: *corium* between the anterior margin and the middle nerve almost white, from thence to the claval suture yellowish; the furcato middle nerve, from about in a line with the apex of the clavus, black; apex of the marginal nerve between the bifurcation, black; *clavus* yellowish, nerves darker. *Wings* pale, transparent; two entire nerves, the transverse nerve and a short one from its upper extremity to the dorsal angle, black. *Sternum* pale yellow. *Legs* pale yellow. *Claws* black.

Abdomen pale yellow, above frequently brownish, side margins and dorsal line pale ; genital segment pale yellow, almost white.

Developed form ♀.

Like the above in all particulars ; ovipositor black.

Undeveloped form ♂ and ♀.

Clear pale yellow.

Thorax : pronotum and scutellum between the keels almost white. Elytra lanceolate, as long as the abdomen, middle nerve at the apex generally brownish. All the other characters as in the developed forms.

Length : developed, $1\frac{1}{2}$ — $1\frac{3}{4}$ lines ; undeveloped, $1\frac{1}{8}$ line.

Very closely allied to *L. Scotti*, and the resemblance is most remarkable in the undeveloped form. It is, however, more delicate than that insect, is smaller in every way, and has not the black spot on the cheeks, nor the ovate black spot at the apex of the elytra.

I am not aware that the developed form of *L. pallidula* has ever been noticed before, and it is on this account that I have described it. Although the type (undeveloped) which Dr. Stål was good enough to send me has no dark markings on the elytra, yet in fresh specimens there are more or less traces of the middle nerve being brownish next the apex.

Rare in the developed state ; undeveloped form common.

Taken by myself at Wimbledon, in September.

Species 22a.—*LIBURNIA EXTRUSA*, n. s.

Undeveloped form ♂.

Yellow. Styloid processes black, viewed from above they are seen to project outwardly, and appear like a \cap .

Head : crown yellow, the foveæ small, somewhat deep and distinct. Forehead and face slightly dusky, keels, and a narrow transverse line a little above the lower margin of the eyes, pale yellow, base of the forehead brownish ; clypeus brownish, keels pale yellow ; cheeks yellow, inner margin narrowly brownish. *Antennæ* : 1st joint pale yellow, 2nd pale brownish-yellow. *Eyes* black. *Ocelli* black.

Thorax : pronotum pale yellow, keels distinct but not prominent ; sides more or less fuscous beyond the keels. Scutellum pale yellow, keels distinct, sides more or less fuscous beyond the latter. Elytra pale yellow, covering about two-thirds of the abdomen, rounded at the apex, nerves with minute granules, marginal nerve, except round the pale yellow apex, white. Sternum yellow ; metasternum on the sides with a black spot. Legs yellow, 1st and 2nd pairs somewhat dusky ; claws black.

Abdomen yellow, sides slightly fuscous, base of the segments very narrowly, and three minute spots on each, blackish; these last characters are more or less distinct in different individuals: *genital segment* yellow, side of the posterior margin brownish-black in the middle; viewed from behind, there is a black spot on each side of the centre: styloid processes black; when viewed from above, they are seen to project outwardly, somewhat in the shape of a horse shoe.

Undeveloped form ♀.

Abdomen yellow, the three spots on the segments more or less distinct.

var. fuscula. *Elytra* fuscous-yellow, nerves darker, granules distinct. *Abdomen* dusky yellow, sides broadly fuscous-black, posterior margin of the segments across the back more or less fuscous-black, their extreme margin fuscous-yellow. All the remaining characters as in the other form.

Length, ♂, 1 line; ♀, $1\frac{1}{4}$ — $1\frac{1}{2}$ lines.

This species stands immediately before *L. neglecta*, Flor, which it is extremely like; and, but for Flor not mentioning the *projecting* styloid processes, so very characteristic in this species, or the white marginal nerve of the elytra, also very distinct, and the different shape of the genital segment of *L. neglecta*, when viewed from behind, as figured by Fieber in the *Verhand. d. k. k. zool. bot. Gesell.*, vol. xvi, t. 8, fig. 52, I should have referred it to that species without doubt.

I took both sexes at Wimbledon, in September last, but very sparingly. Mr. Douglas and I had each, some years ago, taken the ♀; but, as we could not reconcile it with any description, it has stood amongst our doubtful species until now.

Genus 6.—ACHOROTILE.

Head: crown quadrate. *Face* with two middle keels, parallel from the crown to within a short distance of the clypeus, where they approximate; the channels between the side and middle keels pustulate. *Antennæ* with the basal joint short, about three-quarters of the length of the second.

Thorax: *pronotum* with three keels, those on the sides not reaching to the posterior margin, but curved round outwardly, their inner margin pustulate. *Scutellum* with three entire keels; side keels diverging posteriorly, pustulate along their inner margin. All the other characters as in *Liburnia*, &c.

Genus 6.—ACHOROTILE, *Fieb.*

Species 1.—ACHOROTILE ALBOSIGNATA.

Delphax albosignata, Dahlb., k. Vet. Ak. Handl., p. 199 (1851);

Stål, Öfvers., xi, 196, 31 (1854).

Delphax fuscinervis, Boh., k. Vet. Ak. Handl., p. 113 (1852).

Achorotile albosignata, Fieb., Verhandl. d. k. k. zool. bot. Gesell., xvi, 521, 15, t. 8, fig. 16 (1866).

Undeveloped form ♂.

Black, shining.

Head: crown yellowish-white, the three foveæ deep and distinct, the keels acute and prominent; two pustules on each side between the side and middle keels. *Face* dark brown or somewhat piceous on each side; in the channel between the side and middle keels are seven pustules, placed thus—three in a line with the eye, two next the clypeus along the outer margin of the middle keel, and two (the uppermost of which is almost in a line with the lower margin of the eye) along the inner margin of the side keel; along the side keels, towards their lower extremities, are also five pustules, similar in position to those along the middle keel. *Clypeus* and *cheeks* dark brown or piceous. *Antennæ* dark brown, 1st joint darkest.

Thorax: *pronotum* pitchy-black, with a broad yellowish-white streak down the middle, outer margin of the side keels with four pustules. *Scutellum* pitchy-black, with a yellowish-white streak down the middle; inner margin of the side keels with two pustules. *Elytra* pitchy-brown, shining, not covering more than the two basal segments of the abdomen, almost truncate posteriorly; nerves distinct, not granulated. *Legs* fuscous-black; *thighs*, apex whitish; *tibiæ*, 3rd pair, spines and apex whitish; *tarsi*, 3rd pair whitish, 3rd joint brown.

Abdomen black, shining, posterior margin of the 2nd and 3rd basal segments broadly white; *genital segment* above posteriorly somewhat brownish.

Length 1 line.

This insect may at once be distinguished from every other in the family by the pustulations on the head, pronotum, and scutellum, and the white margin to the basal segments of the abdomen, as pointed out.

I have made the description from a continental example of the undeveloped imago, presented to me by Dr. Stål, on the strength of six pupæ taken by J. C. Dale, Esq., near Bonchurch, in the Isle of Wight, in October. Both sexes are represented, the pupa of the female being orange-yellowish, with the two basal foveæ on the crown and two spots on the scutellum, black, and the sides of the elytra and abdomen more or less fuscous; that of the male being entirely fuscous-black. The pustules are present on the head and face as in the perfect insect.

There is but this one species known on the Continent, and which, according to Dahlbom, occurs in July.

NOTES ON THE LEPIDOPTERA OF BRANDON.

BY CHARLES G. BARRETT.

It is a fact so well known to Entomologists that I need hardly recall it, that the sand-hills which, in many parts, line our coasts, form the almost exclusive habitat of many species of *Lepidoptera* (as well as of other orders), and that these species are seldom, if ever, known to wander inland, appearing unable to exist on any different soil. These species are so well known that I need not give a list of them, but pass at once to my subject.

Early last June, I met Mr. de Grey, by appointment, at Brandon, in Suffolk, for a raid upon the specialities of that celebrated district. The weather being propitious, we had, I think, the most glorious day's collecting I ever remember; but it is not of the rarities we captured that I desire now to speak, but of certain coast species whose occurrence in that inland locality is worthy of especial notice.

In the fields we found *Anerastia lotella*; from over-hanging grass roots at the railway side we dislodged *Gelechia marmorea* and *distinctella*; *Gelechia desertella* swarmed in hundreds among grass and stunted furze-bushes; and at flowers of sainfoin in the evening, we took several *Mamestra albicollis*.

Of these five species, four are well known as otherwise exclusively inhabitants of coast sand-hills, and the remaining one, *Gelechia distinctella*, is seldom found away from them, their occurrence all together then at this locality appears at first sight sufficiently astonishing.

Some explanation of it, however, is to be found in the fact that the soil consists of almost precisely such a loose sand as is found on the coast, a sand so loose, indeed, that a field ploughed on one day is often found perfectly smooth and level by the next morning, from the action of the wind in the night.

One of the most accomplished practical geologists in this county informs me that there is no doubt that this tract of country—which extends some miles—was actually a range of coast sands at a recent point of the Post-Glacial period, when the great valley of the fens was still submerged.

It is now, however, perfectly isolated, the nearest portion of sea being the Wash, more than twenty miles distant, while the eastern coast, with its fringe of sand-hills, is more than forty miles away; the intermediate country being in both cases of a totally different character, and utterly unsuited for the existence of the species in question.

Although the Post-Glacial epoch is, I believe, comparatively a

very recent one, the actual length of time which has since passed is so great, that I presume few geologists would venture to compute it even in thousands of years. And although there has evidently been considerable oscillation of the land during the subsequent period, the deposits of gravel, &c., in different parts of the fen valley, indicate that fresh water agencies were at work, and that the sea had not the same action on the old coast line, since the later Post-Glacial period. This view is confirmed by the absence of marine shells in these deposits, while the immense lapse of time is further shown by the presence of an abundance of a fresh-water shell (*Cyrena fluminalis*) imbedded in them, although the species has now totally disappeared from the seas of the north of Europe, and is not known to occur nearer than the mouth of the Nile.

The occurrence of these coast sand-hill insects on this ancient sea-shore is therefore a circumstance of considerable interest, particularly as they appear to be by no means rare there (indeed, *Gelechia desertella* is most abundant), and the question naturally arises how they reached so congenial a spot.

The intermediate answer to be expected is "by migration," and theories in plenty instantly crop up of chance specimens carried the whole distance by winds. A moment's consideration of the habits and structure of most of these species, however, shows such a solution to be utterly untenable. Whatever the strong *Mamestra albicollis* might do, it is very unlikely that it would allow itself to be carried by any wind across two miles of country, far less twenty; while we all know how carefully the weak *Anerastia lotella* and the lively little *Gelechia* avoid exposing themselves to a breeze, and that they will never move on the wing except in calm weather, or good shelter. Moreover, the "blown across" theory can only hold good over a level surface like the sea, and in the case of strong insects, such as butterflies, which, provided the sun be shining, will brave a considerable amount of wind, but over a country covered with scattered trees, with occasional hills and other inequalities of surface, the disturbing currents caused thereby would inevitably precipitate all such matters to the ground, or enable them to reach it.

Ordinary migration of species cannot be accepted as a solution of the difficulty, since, as I have already stated, the intermediate country is utterly unsuitable for the existence of these sand-loving insects. It consists of fen, wood, heath and cultivated country. The heaths are sandy tracts as a matter of course, and I am informed that there are

considerable tracts of green-sand on the side of the county bordering the fen valley, but this formation in other parts of England is found no more favourable to coast sand-hill insects than any other.

As nobody will, I suppose, venture to suggest that there has been a special creation for this little spot, the only reasonable conclusion to be arrived at, in my opinion, is, that these species have occupied this suitable ground from the time of the close of the Post-Glacial period, at least, and previous to the upheaval of the present fen valley, and that they have remained unchanged in form, and even in colour, through the many conditions of life comprised in so long a period, and in particular that of the change from the saline influences of a neighbouring sea, to those of a warm inland district.

One slight change of habit is apparent, due doubtless to the higher temperature. All these species were out on June 4th, *desertella* in swarms, and a week later *lotella* was common, and *albicolon* getting worn, while at this latter time *albicolon* and *desertella* were just beginning to come out at Yarmouth, and the other species were not to be found till a fortnight later, July being their time of appearance on the coast.

Since this subject has occupied my attention, I have received some valuable confirmatory evidence. Mr. de Grey informs me that he has taken *Agrotis cinerea*, *Gelechia vilella*, and *G. pictella*, at Brandon, and *G. marmorea* on a portion of the Merton estate to which this drift sand extends. The Rev. H. S. Marriott of Wickham Market, and Rev. H. Williams of Croxton, report, not only *Mamestra albicolon* and *Anerastia lotella*, but also *Eubolia lineolata* and *Agrotis valligera* occurring commonly on the sands round Thetford, the former on grassy heaths and the latter flying over lucerne fields. And, in addition to all this, I hear from Henry Stevenson, Esq., F.L.S., author of "The Birds of Norfolk," that a colony of the Ring Dotterel (*Charadrius hiaticula*), a bird which breeds exclusively on coast sands, has bred upon Thetford Warren from the time of the earliest records, and was then immensely more numerous than within the last fifty years; and that it is his opinion, and that of Professor Newton, from their knowledge of the habits of some birds, and the persistency with which they return to breed in the place where they were reared, that these Ring Dotterels have occupied the same spot in uninterrupted succession from the time when the Thetford and Brandon sands lay on the shore of the Post-Glacial sea until the present day.

There is an interesting point which I have not touched upon.

Many of the insects that I have mentioned belong to large genera of closely allied species (*Mamestra*, *Agrotis*, *Gelechia*), genera such as have been pointed out as the most likely to produce new species by natural selection. These species, however, in spite of their isolation and alteration of condition, are as true, and as clearly defined, as those of our present coast.

It is also interesting to know that this same tract of sand is the home and almost exclusive habitat of several species not known as attached to sea sand-hills, and seldom or never met with in any other part of the United Kingdom. Among these, I may mention *Acidalia rubricata*, *Lithostege griseata*, *Agrophila sulphuralis*, *Spilodes sticticalis*, *Oxyptilus latus*, *Eupæcilia anthemidana*, and *Tinea imella*, all of which figured conspicuously in the glorious day's collecting mentioned in the beginning of this paper. The food-plants seem to have nothing to do with this partiality, as *Sisymbrium Sophia*, *Convolvulus arvensis*, and *Erigeron acre*, for instance, are common enough in most places.

Norwich : 14th December, 1870.

ADDITIONS AND CORRECTIONS TO THE LIST OF BRITISH SYRPHIDÆ,
WITH A DESCRIPTION OF ONE SPECIES NEW TO SCIENCE.

BY G. H. VERRALL.

In the January number of this Magazine for last year (vol. vi, pp. 173—176), I published a list of our indigenous *Syrphidæ*, and then stated that I believed it very imperfect. During the past year I have added several species and two new genera, and have also noted a few corrections of synonymy.

1. *Pelecocera tricincta*, Meigen : I have seen a female of this interesting species, belonging to Mr. J. C. Dale, which was captured near Bournemouth. The insect resembles a *Sphærophoria*, but is easily distinguished by its remarkable antennæ.
2. *Didea alneti*, Fallen : the asterisk may be removed from this species in my list, as Mr. J. C. Dale possesses a specimen from Scotland.
3. *Syrphus seleniticus*, Meigen : I have for a long time possessed an old specimen of this, probably British, but I know nothing of its history ; it should be common in England, being found all over the continent, extending even from Sweden to Gibraltar and Madeira, along with its close ally *pyrastri*.

4. *Syrphus venustus*, Meigen : Walker says of this, "generally distributed," but I purposely omitted it from my list, as I could not find it in any collection ; I have since seen a specimen (♂) in Mr. N. Cooke's collection, and which I believe is of this species.
5. *Syrphus cinctus*, Fallen : Walker says of this also, "generally distributed," but all I could find were *cinctellus*, Zett. ; I believe I have since seen the true *cinctus* in Mr. Marshall's collection, but in bad condition, so that I feel some doubt about it.
6. *Melanostoma barbifrons*, Fallen : Mr. B. Cooke possesses this species, and sent me two males to name.
7. *Platychirus melanopsis*, Loew ; 8. *P. scambus*, Zett. ; 9. *P. angustatus*, Zett. ; and 10. *P. podagratus*, Zett. ; I recorded in the number of this Magazine for last November.
11. *Chilosia nebulosa* (n. sp.): *tota flavo-hirta* ; oculis hirtis ; epistomate nudo, descendente ; antennis rufo-flavis, apice fuscis, seta nuda ; scutello pilis nullis nigris ; pedibus luteis, femoribus fere ad apicem, tarsisque apice, nigris (tibiis annulo obscuro ♂) ; *alis nebulosis* (long. $3\frac{3}{4}$ —4 lin., alar. exp. 8 lin.) ♂ ♀.

This species comes at the end of the group containing *grossa*, &c. Its nearest ally seems to be *pictipennis* of Egger, which, however, is considerably larger ($5-5\frac{1}{2}$ lines), and on the abdomen of the male of which the two basal segments are clothed with abundant pale yellow hairs, but the rest with deep black hairs. Egger also describes the tarsi as brown in the male and dark yellow in the female ; whereas in *nebulosa* the pubescence is all reddish-yellow, and the tarsi of the male are luteous, the two last joints and the hind meta-tarsus being rather obscure ; in the female the four basal joints of the tarsi are reddish-yellow, the fourth joint of the hind pair being rather obscure. Egger also speaks of the wing in *pictipennis* as being spotted rather than clouded. The female of *pictipennis* has the two basal segments of the abdomen dark metallic-green, the others shining black, while in *nebulosa* the abdomen of the female is all shining blackish. The other characters of the male of this species are as follows : the epistoma is black, not very shining, with but little tomentum, except in the hollow beneath the antennæ ; the eye-margins are sharply defined, rather broad, with a distinct fringe of pale hairs ; in profile the *front* is inflated, the epistoma very slightly hollowed beneath the antennæ, then rather gradually produced to a small knob, the upper and lower angles of the mouth being almost equally produced ; the cheeks are rather large, greyish-yellow ; the lower part of the back of the head is rather inflated and clothed with deep yellow hairs ; the vertex and *front* are clothed with abundant, rather long, yellow hairs, the *front* having also considerable tomentum on the sides and a faint middle channel ; the antennæ are blackish at the base, the third joint moderately large, rounded, reddish-yellow, with the tip brown, arista pitchy, bare, thickened at the base ; thorax and scutellum shining æneous, thickly and regularly punctate,

clothed all over with abundant, rather long, deep yellow hairs, no black hairs being intermixed even round the edge of the scutellum or on the sides of the thorax; alulae whitish-yellow; halteres luteous, tip of the knob brownish-black; abdomen black, with its edge considerably recurved, dull and roughened on the second, and disc of the third, segments, moderately and regularly punctate on the shining, rather æneous, fourth segment; the pubescence is rather abundant, all reddish-yellow; legs black, the tibiae, the tarsi, and the tip of the femora luteous, the tibiae and tarsi marked as I have mentioned above; the hind meta-tarsus is large and long, but very slightly dilated; the femora have a tolerably abundant pubescence, and there are sometimes some black hairs intermixed with the luteous ones behind the front pair, and there are also (as in many other species) short black bristles beneath the hind femora: the wings have a strong yellowish tinge along the costa and about the base, the veins being yellow, except at their tips, the transverse veinlet is very distinct, dark brown, and across the lower transverse veinlet and base of the cubital vein is a slight dark band, and a slight dark blotch or cloud near the end of the cubital cell. In the female the eyes are rather thinly hairy; the pubescence is altogether shorter and less conspicuous; the *front* is broad, with three longitudinal channels, the middle one being faintest, and just below the middle is a distinct transverse channel; the antennæ are rather larger, altogether reddish-yellow; the abdomen is more elliptical.

This species was captured by Mr. J. H. A. Jenner in some numbers in Bathurst Wood, near Battle, Sussex, in April. The males fly about in the rides, high up in the air, like *C. flavicornis* ♂; the females, of which Mr. Jenner only took one, are lower down on the shrubs, &c.; I have likewise seen a female in Mr. W. C. Unwin's collection, and which was also probably caught in Sussex.

12. *Chilosia longula*, Zett.: Mr. B. Cooke sent me this species to name, and Mr. J. C. Dale also possesses it; it has not previously been taken out of Sweden, whence Zetterstedt records three specimens. It is one of the bare-eyed, black-legged group, but is distinguished by the pale knees and smoky-black alulae.
13. *Helophilus frutetorum*, F.: the asterisk may be removed from this in my list, as Mr. Marshall possesses a New Forest specimen.
14. *Xylota abiens*, Meigen: when I published my list I had seen only one spotted species of *Xylota*; but Mr. Cooke having sent me specimens of two others, I found that the one I possessed (though named *nemorum* by Loew) was *X. abiens* of Meigen, known by its smaller size, by the short spine on the hind trochanters of the male, by the thick (not very thick) hind femora, and the bluish hue often visible on the abdominal spots; I captured a pair at Abbott's Wood in Sussex, on June 28th, 1867, and Mr. Cooke has a male and Mr. Dale a female.

15. *X. florum* is rather larger (5 lines against $4\frac{1}{2}$), the male has also a short spine on the hind trochanters, the hind femora are comparatively thin, the pubescence all down the edge of the fourth abdominal segment is whitish, and the base of *all* the tibiæ is distinctly yellow. Of this, Mr. B. Cooke possesses a pair, and Mr. Marshall one very dark female, labelled Keswick. *Xylota nemorum*, F. is allied to the two above mentioned, but is distinguished by the unarmed hind trochanters of the male (proving it to be *florum* of Zetterstedt), by its short, stout appearance, by the squarer abdominal spots (proving it to be also *bifasciata* of Meigen), and by the thick hind femora (thickest of all the three); Mr. B. Cooke and Mr. Marshall possess the species.
16. *Plocota apiformis*, Schrank: this species and genus can hardly be considered new to our lists, considering it is figured by Moses Harris from a British specimen; it has, however, never been recorded since. Mr. J. C. Dale possesses a specimen. The species seems sparingly scattered all over Europe.
17. *Eumerus litoralis*, Curtis, is only a synonym of *sabulonum*, according to a specimen given me by Mr. J. C. Dale.
18. *Orthoneura brevicornis*, Loew: there was a male of this among some *Diptera* given me by Mr. D'Orville of Exeter.
19. *Pipiza vana*, Zett., is only the male of *noctiluca*; I caught both together abundantly at Rannoch last year.

In addition to previous synonymy, I believe *Platychirus quadratus* of Macquart is only *scutatus*, and his *dilatatus* only *peltatus*; I agree with Malm in considering *Pipiza carbonaria* and *stigmatica* of Zetterstedt to be only small varieties of *P. noctiluca* ♂; *Tropidia dorsalis* of Macquart does not seem to have any distinguishing character from *T. milesiformis*, as the difference in the form of the epistoma, which he relies upon, seems but very slight, and probably accidental.

I possess several other species, principally from Rannoch, not yet sufficiently identified to bring forward; the present paper, however, adds fifteen species to my previous list, confirms two doubtful ones, and excludes two, making the present number of species 179, five of which still remain doubtful.

Analysis of Thomson's "Opuscula Entomologica," Fasc. i and ii.—Since the completion of his very able work on Scandinavian Coleoptera, C. G. Thomson has commenced the publication of a series of papers on Swedish insects of several orders, under the title of *Opuscula Entomologica*. Except that they are confined to the Scandinavian fauna, these much resemble in their scope Mulsant's well known "Opuscles." Two fasciculi have already appeared, consisting together of 304 pages, and containing fifteen papers; the first fasciculus bears the date of 1869, the second of 1870. As the contents of these fasciculi are of the greatest interest to British entomologists, a short account of them will doubtless be acceptable to the readers of this Magazine.

The first paper is on the genera of Swedish bees; 27 genera are characterized, of which several appear to be new, but as no authors names are attached to any of them, I can give no further particulars. The second paper is on the *Coriæ* of Sweden; 24 species are described, of which six are new; no reference is made to any of Messrs. Douglas and Scott's species, and it is probable that some, at any rate, will prove to be identical with these. The third paper describes the six Swedish species of the genus *Calidors*; four appear to be identical with British species. Next comes a paper describing the Swedish species of *Iassus*; 72 species are described, three being considered new. The fifth paper describes the genera and species of Swedish *Vespariæ*, both the social and solitary wasps being included under this name. No less than 22 species of *Odynerus* are described, and of this number the author appears to consider eight as previously undescribed. The sixth paper is also devoted to the *Hymenoptera*, and describes the species of *Epeolus*, *Nomada*, and *Sphecodes*. Of the first, two new species are described; and of *Nomada* six, and of *Sphecodes* four, novelties are brought forward. The seventh paper describes the genera and species of the Linnaean genus *Chrysis*; six genera and 28 species are treated of, the new species in this case are two in number, and belong to the modern genus *Chrysis*. Then comes a paper for the dipterist, describing the Swedish species of *Pipunculus*, 25 species (three new) are given. The ninth paper enumerates species of *Coleoptera* new to the Swedish fauna: these are *Bembidium Clarkii*, *Haliplus transversus* (n. sp., near *fluvialis*); *Ilybius unescens*, hitherto confounded with *guttiger*, Gyll.; *Anacæna carinata*, n. sp. (= *variabilis mili*); *Philonthus lucens*, *Heterothops nidicola*, n. sp., *Stenus glabellus*, n. sp., separated from *carbonarius*, Gyll., *Cyphea curtula*, *Atheta incognita*, *A. vilis*, *A. atomaria*, *A. pallescens*, *A. ischnocera*, n. sp., *A. glabella*, n. sp., *A. laevana*, *Tachinus proximus*, *Choleva cisteloides*, *Trichopteryx fucicola*, *Cis puncticollis*, n. sp., *Trachys pygmaea*, *Orthopleura sanguinicollis*, *Dasytes rugipennis*, *Dircæa 4-guttata*, and *Bagöus angustulus*, n. sp. The tenth paper describes the Swedish species of *Andrena*, thirty-nine in number, whereof six are new. The eleventh paper treats of Swedish *Crabronidæ*, four novelties in the genus *Crabro* being described. The next article is a monograph of the Swedish species of *Lygæus*; these are 57 in number, of which Thomson considers five new. The thirteenth paper is devoted to *Hymenoptera*, and describes the genera and species of Swedish 'Rofsteklar' (fossorial *Hymenoptera*): two new species of *Pompilus*, two of *Pemphredon*, and one of *Tachytes* are brought forward. Then come descriptions of the Swedish *Bombi* and *Apathi*, the former 21 in number (one new), the second five. The fifteenth and last paper is a revision of the genera and species of Swedish *Tenthredinidæ*; among their number several novelties are enumerated.

It will thus be seen that the work, as far as it has hitherto gone, is of the greatest interest to the students of our entomological fauna; and containing, as it does, a great deal of original matter, it indicates a vast amount of research on the part of the author, and a thorough acquaintance with insects of various orders, very rare at the present time.—D. SHARP, Eccles, Thornhill, Dumfries, *January, 1871.*

Alterations in nomenclature of Hydroporus; &c.—I propose to change the name of the *Hydroporus* described by me as *H. parallelus* (Ent. Mo. Mag., vi, p. 84), to *H. longicornis*; the name *parallelus* having been already used once or twice in the genus *Hydroporus*.

The *Dytiscus melanocephalus* of Marsham (*Hydroporus melanocephalus* of Stephens) not being the *melanocephalus* of Aubé and modern authors (*vide* Wat. Cat.), two changes in name are unfortunately necessitated: the synonymy below will explain them.

1. *H. melanocephalus*, Marsh., Steph.
pubescens, Gyll.
2. *H. scaphiformis*, Mihi.
melanocephalus, Gyll., Aubé, Thoms.

In my remarks upon *Trogophloeus bilineatus* in the last No. of this Magazine, I inadvertently wrote *obesus*, instead of *obscurus*, for the Stephensian species quoted by v. Harold.—ID.

Additions, &c., to the list of British Coleoptera.—

PEDIACUS DEPRESSUS, Hbst.; Er., Ins. Deutschl., iii, p. 311. Of this most interesting and curious species, Mr. John Ray Hardy, of Hulme, Manchester, has taken eight examples, out of chinks of very rotten oak, in a yellowish, minute, dusky fungus, like mould; five near Knutsford Park, Cheshire, on 29th July, and the other three near Stretford, on the Cheshire side of the river Mersey, on 5th August last. It is immediately distinguishable from *P. dermestoides* by its lighter colour, more shining appearance, narrower shape, longer thorax (of which the lateral teeth are more pronounced, and the 4th or posterior denticle is situated considerably *above*, instead of actually *at*, the hinder angle), more evident and less close punctuation, more evident frontal depression, stouter legs, and longer antennæ, of which the third joint is especially longer in proportion.

I have also recently received *Pediacus depressus* from Mr. Wollaston, who found a few specimens of it (in company with *Cryptophagus dentatus*, *Corticaria serrata*, &c.) amongst stores of unquestionably British produce, on board Mr. Gray's yacht last year,—one example having been found in Dartmouth harbour. It is curious to observe how readily the species of *Cryptophagus*, *Læmophilæus*, *Silvanus*, and *Pediacus* make themselves at home in such widely different habitats as stores of food in houses, and the bark of forest trees.

LÆMOPHLEUS PUSILLUS, Schön. Mr. J. Ray Hardy has during the past autumn taken this species out of filbert nuts, Sheffield Wood. It is, I believe, usually considered doubtful as a truly British insect,—at all events as on the same level as *Trogosita*, *Bruchus pectinicornis*, &c. Its quadrate thorax and the very long antennæ of its male readily distinguish it from its allies in this country.

CRYPTOPHAGUS SCHMIDTII, Sturm; Er., l.c., p. 350. A single example of this fine species was taken by Mr. G. C. Champion about the middle of August last, at Wicken fen, in stack refuse. On account of its large size and long pubescence, *C. Schmidtii* is only compared with *C. lycoperdi* by Erichson; but those who, like myself, have hitherto examined all the specimens of the latter insect that have come to hand, in the hope of detecting *Schmidtii* among them, may for the future save themselves that trouble, as the facies of the two species is utterly dissimilar, *C. Schmidtii* having the longer antennæ and posteriorly more contracted elytra of *setulosus*, and the toothless, obtuse, flattened, thoracic anterior angle of *saginitus*. Mr. Champion's specimen (which agrees well with continental *Schmidtii* from Märkel in the Brit. Mus. coll.) is a large one, $1\frac{1}{2}$ lin. (Engl.) in length, quite as large as ordinary *lycoperdi*. Putting aside *lycoperdi* (if only on account of the sharp tooth at the outer apex of its tibiæ which separates it from *all* its congeners, and of its small sharp anterior thoracic denticle), *C. Schmidtii* can only be confused with *setulosus*, from which its rather larger size and less broad build, the less transverse sub-apical joints of the club of its antennæ, the lesser development of its thoracic anterior callosity and lateral denticle, and the punctuation of its elytra not being disposed to run in striæ, will serve to distinguish it.

It may not be out of place here to observe, that, amongst some beetles very recently sent to me for determination by Mr. J. Kidson Taylor, is a specimen of *C. lycoperdi* of exactly one English line in length. My largest example of that species rather exceeds $1\frac{1}{2}$ Engl. lines; and Erichson gives a latitude (or rather longitude) of from $1\frac{1}{4}$ to $1\frac{1}{2}$ lines for it. Considering the greater length of the German line, Mr. Taylor's specimen must, I think, be considered as extraordinarily small. As a matter of course, *lycoperdi* would be about the last species to which one would think of referring it, *primo visu*.

DASYTES OCULATUS, Kies. Mr. J. Ray Hardy has obtained this species by beating oaks in Sherwood Forest during July and August last; and I have a ♀ taken by myself in the London district. There are also some examples of it taken at Sherwood, among the insects above referred to as sent to me by Mr. J. K. Taylor. In addition to the characters of larger eyes in ♂, and *two* testaceous basal joints of the antennæ and testaceous anterior coxæ in ♀, referred to in Ent. Ann. 1871, I may observe that this species may be known from *D. plumbeus*, Müll. (*flavipes*, Wat. Cat.), by the reticulations of its eyes being coarser, its tibiæ not being of so bright a yellow, its tarsi (and especially the basal joints) being longer, the depression between its eyes being more sharply defined, the punctuation of its elytra being not so close, and its generally more shining appearance.

THYAMIS RUTILA, Illig.; Allard, Mon. Alt. (L'Abeille), p. 235. This species has been introduced into our lists (as I have satisfied myself by an inspection of the leading collections in which it is supposed to exist) on the authority of red specimens of the common *T. jacobææ*, Waterh. (*tabida*, Auct.), from which it differs, amongst other less important characters, in its much stronger and more evident punctuation, which on the elytra is disposed in striæ near the base. Mr. Moncreaff has taken several specimens of what I believe to be the true *T. rutila*, by sweeping dried *Mentha aquatica* near Southsea, during the months of November and December; and it is to a large, old, disguised, discoloured and broken example of these

that the insect referred to by that gentleman at p. 155 of the present Vol. as *T. agilis*, Rye, must be attributed. I am answerable for this error, as I so named that example, though with a reserve of doubt, on account of apparent discrepancies between what remained of its (too slender) antennæ and those of *T. agilis*. The sight of additional specimens has entirely justified my doubt: indeed, the bright red colour of the Southsea species is quite enough (without the structural differences) to separate it from my *agilis*.

Allard mentions *Scrophularia aquatica* as the food-plant of *T. rutila*; but, from the time of year at which Mr. Moncreaff's captures were made, it would be impossible to say on what plant his insects had fed up.

THYAMIS CERINA, Foudras; All., l.c., p. 154. I have in my cabinet a *Thyamis*, taken by myself in the London district, which I attribute to this species. It is rather smaller than *T. ballota*, which it considerably resembles, and from which it differs in being ferruginous-red beneath (instead of black), and in having the punctuation of its elytra confused (instead of being disposed in tolerably distinct striæ near the base) and not quite so strong.

TRIMIUM BREVIPENNE, Chaud. Thanks to the liberality of Mr. Lawson of Scarborough, who has kindly sent me many specimens of *Trimium*, I am enabled by personal experience to corroborate the somewhat doubting record of this species in Ent. Annual for 1870. Of Mr. Lawson's captures in 1869, about two-thirds seem to be *T. brevipenne*, and one-third *brevicorne*; and, from the former being so small and tender that they would not bear setting, he came to the conclusion at the time that they were an immature condition of the latter. It may be worth while to repeat here that *brevicorne* (which has occurred to Mr. Waterhouse at Bishop's Wood) is the larger and darker of the two, with decidedly larger eyes, and rather longer elytra, which are rounded comparatively abruptly at the shoulders, the rounding in *brevicorne* commencing almost directly from the hinder apex of the wing-case. There is also a very slight difference in the hinder margin of the elytra, which is apparently less evidently indented just before each outer angle in *brevipenne*.—E. C. RYE, 10, Lower Park Fields, Putney, S.W.: January, 1871.

Note on possible double-broods of Thyamis.—Is it known for certain if any of the species of *Thyamis* are double-brooded? All those with which I am acquainted leave the pupa in autumn, hybernating as perfect insects; and their resulting larvæ feed through the spring and summer. Now, unless *T. jacobææ* be double-brooded, I cannot see how the small red specimens which I get at Hayling Island from November to May, and the larger pale specimens which I get on Southsea Beach from June to September, can be properly attributed to one species; and yet I do not doubt but that both are *T. jacobææ*.—H. MONCREAFF, 9, Wish Street, South sea, January, 1871.

Duration of the larval state in Eros.—I have just bred another *Eros affinis* from Killarney. It is now five years since I took the larvæ, seven in number,—from which I have succeeded in rearing five of the beetle.—JOHN RAY HARDY, 118, Embden Street, Hulme, Manchester, January, 1871.

Note on the occurrence in Britain of Corizus Abutilon, Rossi, a species of Hemiptera-Heteroptera new to our lists.—In the middle of July last, I captured a single specimen (♀) of *Corizus Abutilon*, Rossi, by sweeping mixed herbage on the coast at Deal, Kent.

A description of the above species will shortly be published in this Magazine.—G. C. CHAMPION, 274, Walworth Road, London, S., January 13th, 1871.

Notes on the Hemipterous genus Halobates.—In trimestre iii (anno secondo) of the *Bullettino della Soc. Ent. Italiana*, is an interesting notice (pp. 260, 261) on this oceanic genus of *Hemiptera*, by Professor Enrico Hillyer Giglioli, who was attached to the Italian war-ship "Magenta." His notes are summarised as follows:—

"First took *Halobates* in the South Atlantic on the 29th December, 1865, in lat. 16°. 11'. S., long. 36°. 00'. W. (Paris), at about 400 miles from the South American coast. On the following day took others, but not commonly. In May, 1866, more were found in the Straits of Banca, in the gulf of Siam, and in the vicinity of the island Pulo Condor, when the ocean was covered with broad tracts of *Trichodesmium*. On the 10th February, 1867, we again entered the Indian Ocean, in which *Halobates* was found most abundantly, from the 12th, lat. 11°. 33'. S., long. 106°. 40'. E. (Greenwich), to the 17th, lat. 14°. 59', long. 105°. 48', between which limits the sea was spread with flakes of *Trichodesmium*. In traversing the Pacific we again found the bug abundantly, some hundreds of miles from the American coast, from the 29th August, in lat. 26°. 27'. S., to the 6th September, in lat. 29°. 21'. S. Finally, it was found on the voyage home in the Atlantic (January, 1868), first in lat. 26°. 38'. S., secondly in lat. 4°. 28'. N. From a not minute examination of the specimens all seem to pertain to one and the same species. I conclude by stating that this insect, spread over all the tropical seas, certainly does not use sea-weed to sustain it on the water, as Coquerel supposed. It was not seen in the 'Sargasso-sea,' and the *Trichodesmium* is certainly not sufficient to float it. A rich series of individuals from different localities is deposited in the Museum of Turin."

These notes have a peculiar interest for me as exciting reminiscences of a voyage of 13 months' duration I made when a youth, in 1855-6. This voyage was marked by a most immoderate amount of calms (in one case extending to 30 consecutive days in the hottest part of the China Sea), and I lost no opportunity of fishing up—and I am sorry now to say, casting away—the, to me, wonderful forms always floating around. Long before crossing the line, on the outward voyage, I was struck by small whitish creatures which often appeared, coursing with great rapidity over the surface of the ocean; at length one was captured, and I well remember my astonishment on finding it was a spider-like insect, of the affinities of which I then knew nothing. They disappeared, or rather were lost to view, as soon as a breath of wind caused a ripple on the surface, but were common in that most unpleasant form of sea-disturbance in which there are great "smooth" waves, the effect of a recent storm, but with no present wind. In the Atlantic, Indian, and Pacific Oceans, it only needed the required state of the sea to bring these merry coursers to view, and certainly often without the presence of the smallest piece of floating sea-weed. Those who have voyaged, will bear me out

when I say that, excepting in the mysterious Sargasso-sea, in the course of the oceanic currents, and in the vicinity of land, sea-weed may be looked for with as much chance of finding it as daisies. I should here state that the brilliant white appearance of the insect on the ocean is caused by the pellicle of air that surrounds it, the creature itself being blackish. If these notes should be read by any one of those "who go down to the sea in ships," I would remind him that, if he can throw any light upon the life-history of this most wonderful insect (how many species there may be I know not), he will confer the utmost benefit upon natural science. The *Trichodesmium* alluded to by Giglioli is a minute confervoid plant, which sometimes covers the surface of the ocean like fine saw-dust.—R. McLACHLAN, Lewisham, November, 1870.

Occurrence in Britain of Neuroterus ostreus, Hartig.—

Cynips ostriæ, Hartig, Germ. Z. f. Ent., ii, 207 (1840); Kirschner, Lotos, v, 204 (1855); errore typ. "*astria*."

Neuroterus ostreus, Giraud, V. d. Zool-bot. V. z. Wien, ix, 350 (1859); Schenck, Beitrage, 68, 72, 105 (1865); Kaltenbach, Die Deutsch. Phytophagen, 66 (1867); v. Schlechtendal, Stettin. Ent. Z., Vol. xxxi, 386 (1870).

In introducing the present species into the British Catalogue, I recapitulate that the Rev. T. A. Marshall has described four others in Vol. iv of this Magazine (pp. 124—126, and 147), namely, *N. Malpighii*, *fumipennis*, *Réaumurii*,* and *politus*.

Instead of attempting to redescribe *N. ostreus* from German and British types, bred by myself, I give Dr. Giraud's description *in extenso*, as in my opinion it is quite sufficient to identify even captured specimens.

"*Niger, nitidus, viz pubescens, ore, squamulis pedibusque rufo-testaceis; coxarum basi nigrescente; thoracis dorso subtilissime punctulato. Ant. 15 artic.*

♀. Long. 2 mill.

"Le sommet de la tête et le dos du thorax sont luisants, mais néanmoins on y distingue un pointillé très fin et peu serré; ce dernier est de plus marqué de quatre sillons très superficiels et peu distincts. Les antennes sont entièrement noirs, minces, et de la longueur du corps. Les pattes sont d'un testacé rougeâtre, avec la base ou la plus grande partie des hanches noirâtre. Les nervures des ailes sont minces et brunes."

As will be seen by the foregoing characters, the insect belongs to Mr. Marshall's "Section I. Sutures of the mesonotum not invisible."

Like the other three British species (so far as ascertained) resembling it in the sculpture of the mesonotum, viz., *N. Malpighii*, *fumipennis*, and *Réaumurii*, it is a true gall maker. I have met with its gall in this neighbourhood for successive seasons on the under-side of the mid-rib of leaves of *Quercus pedunculata* and *sessiliflora*, and in a few cases on well developed side ribs. The females, appearing in June from hibernated galls, oviposit in the mid-rib, where a brownish spot marks

* *Neuroterus Réaumurii* is the insect which has been called *Neurobius* in a letter written by my late friend Mr Wm. Armistead (Newman's "Entomologist," iv, p. 28). Having at the time supplied this gentleman with the correct generic name, I feel bound to over-rule this slip of his pen, as it has crept into the "Zoological Record" for 1868, p. 304, which might lead some continental Entomophilus to think that apparently nobody in England cares a "button" for the name of a *Cynips*, the silky gall of which is of gastronomic interest as part of the food of the dainty pheasant.—A. M.

the locality of the isolated egg. Subsequently, the skin of the rib thus operated upon bursts and discloses a minute egg-shaped or kidney-shaped half solid gall, which is at first green, then yellow, and, when ripe, speckled with red or brown spots. Some oval specimens are close imitations of miniature birds' eggs. From August to October these monothalamous galls ripen, and then drop out of their thin skinny valves. Of course, the name of the insect refers to the distant resemblance of its larval home to an oyster. The larva feeds on the soft inner pulp of the gall, and its full-fed state is generally attained soon after the fall of the gall.

A large number of hibernated galls shaken from oaks, near Shirley (6th September, 1868), into an inverted umbrella, produced a few females in the first and second week of October following; several of the remaining larvæ hibernated and cut out their way as perfect insects (♀) in May and June, 1869. The other sex I have not yet bred. After being left by the insect the gall is reduced to a mere shell of a thin, semi-transparent, papery substance.

The geographical range of this *Neuroterus* seems to be very extensive, as it accommodates itself to *Q. pedunculata*, *sessiliflora*, *pubescens*, and probably to other oaks as well. It has been recorded from Nassau, Halle, Berlin, Freiberg, Zwickau, Kaplitz, Vienna, &c., and I have collected its gall in several localities in the Black Forest and in the Swiss Jura. Of its distribution over Great Britain I am at present profoundly ignorant.—ALBERT MÜLLER, South Norwood, S.E., December 16th, 1870.

Note on an oak-gall.—At page 39 of your Magazine for July last, Mr. Müller has stated that I call a certain unformed swelling of the ribs of the oak-leaf the *kidney-shaped gall*. This is an error. The gall is not *kidney-shaped*, but the case it contains being reniform it suggested to me the name of *kidney gall*.

At page 157, December, 1870, Mr. Müller has corrected his error at my request, but in such a manner as to give the idea that I had changed the name, which I trust I now have shown is not the case. Such distinctive names as this I have found a great convenience in the absence of a knowledge of the insects; but scarcely intended them for publication.—H. W. KIDD, Godalming, January 10th, 1871.

Erroneous record of the capture of Deilephila livornica in Perthshire.—I regret to say that the notice of *D. livornica* in Perthshire (p. 139) is erroneous. I was told, on what I believed good authority, that the insect was *livornica*; but, having lately had an opportunity of seeing the specimen, I find it is only *galii*. In the same collection I noticed *Cucullia chamomillæ*, a species which I think has not previously been taken here.—F. BUCHANAN WHITE, Perth, December 20th, 1870.

A life-history of Ptilophora plumigera.—I am glad to take this opportunity of acknowledging my obligation to the Rev. Bernard Smith, for his kindness in furnishing me, from time to time, with a great variety of subjects for my pencil, as well as for the repeated supply of eggs of *plumigera*, in 1869 and 1870, by means of which I have been enabled to work out the transformations of this rare and local species.

The eggs are laid in November, either singly, or in little groups of two or three together, on the young brown shoots of *Acer campestre*, to which they assimilate

well. The shape of the egg is like a conical button, being of a blunt-topped obtuse cone, rounded off a little towards the broad base, and a little depressed beneath; sometimes it is not quite regular in shape, and the top, instead of being just in the middle of the upper surface, is nearer one side than the other: as to its colour, there is generally on the rounded apex a circular whitish spot, surrounded by a broad ring of deep russet-brown, then comes a narrow ring of pale brown or dingy flesh-colour, followed by another broad one of the dark brown or russet, its lower edge darkest and crenulated, and the lower part of the cone, as well as the base, is of a pearly-whitish tint; sometimes the central spot and the zones are not so distinct, but the whole colouring is of a paler brown, and more diffused: the egg does not change colour till just before the exit of the larva, when it becomes a little paler; and a small hole on the upper surface, or on the side, is the only evidence of the larva having escaped from it. The hatching takes place generally from about the 15th to the 25th of April, though this year I found it begin on the 13th and continue to the 20th.

The newly-hatched larva is about one-eighth of an inch in length, of a very pale greenish-ochreous tint, covered with long, silky, curved, whitish hairs. These little fellows feed at first on the buds of the maple, and their delicate tint matches exactly that of the enveloping sheath of the bud; by the time the buds have begun to burst, the larvæ have moulted, and are no longer so hairy looking, though some few hairs remain. Early in May, when the crumpled young leaves are unfolding, the larva has undergone a further change; it has now a naked and smooth shining skin, is about half-an-inch in length, and its colour is a yellowish pellucid-green, rather deeper on the back, the spiracular region and belly whitish-green; the sub-dorsal pale yellow stripe is already conspicuous on each side of the back, and fine twin lines of the same colour run along the spiracular region: at this stage the larva takes up its characteristic position on the under-side of the leaf, where it reposes in a sort of curved posture, with the head bent round on one side towards the fifth or sixth segment of the body, on the plane of the leaf. By about the second or third week in May, according to the character of the season, the larva attains three-quarters of an inch in length: at this time the back, between the sub-dorsal opaque white stripes, is wholly of a bright, rather yellowish, deep green, semi-transparent yet velvety, while the sides and belly are of a tender opaque whitish-green, the twin lines as before low on the sides but now white, the tubercular warts stand one before the other in pairs on the sub-dorsal stripes, of which they form a part, being also white; the segmental folds pale yellow. Soon after this period a dorsal stripe becomes visible, for the first time, and at its first appearance is very faint, and of an obscure whitish character, as though lying deep below the surface; varieties also now occur that have two transverse bars of white on the twelfth segment, and one on the thirteenth, extending over the back from one sub-dorsal line to the other.

At the end of May, or early in June, the larva attains its full-growth, which is about $1\frac{3}{8}$ to $1\frac{1}{2}$ inches in length, the body plump and cylindrical, rather thicker however in the middle than at each end; the head, the lobes of which are rounded and full, is a little less in width than the second segment; the segmental divisions are tolerably indented, and excepting on the thoracic segments there are no subdividing wrinkles on the back, though they are numerous and distinct on the sides, the back is therefore very smooth.

In colour, the head is a pale transparent yellowish-green : the dorsal stripe of opaque pale blue-green, or whitish blue-green, has, by degrees, become wonderfully developed, and is now so broad as to occupy nearly the whole area of the back, there being but a mere line of the previous transparent deep yellowish-green left next the sub-dorsal white stripes, which, on the twelfth segment, have a tendency upwards to a point, as though inclined to meet one another there, but return again to their former level, and nearly meet at the end of the anal flap ; the sides are of a very pale and delicate opaque whitish blue-green, with two fine rather wavy looking white lines nearly parallel along the region of the spiracles ; the ventral surface, legs, and pro-legs are of a glossy pale full green ; the tubercular warts are now hardly to be observed on the level smoothness of the back ; though the colouring is nearly all opaque and approaching more or less to whiteness, yet the surface of the skin is by no means rough, but has a certain faint polish, allied to smoothness, like that of a new white kid glove.

When about to pupate the larva loses all its beautiful opaque colouring, and then becomes of an uniform green, and semi-transparent, otherwise like the under-side of a maple leaf in tint.

The pupa is enclosed in a thin brittle earthen cocoon, of a broad, oblong oval shape, and formed in an upright position, with little silk in its texture, though the interior is very smooth ; the pupa itself is of a more slender form, with the abdomen somewhat more tapering than that of most *Notodontidæ*, though both extremities are rounded, the tail being furnished with a pair of very small, fine, curved spikes, with which it is attached to the summit of the cocoon, the pupa skin is delicately thin, polished, and of a purplish-brown colour, whilst containing the future moth.

It should be mentioned that the larvæ will feed on sycamore, as well as on maple, and also, that when young, and even half-grown, they seem to be social, as two are often found reposing on the under-part of a maple leaf, folded round side by side, like a schoolboy's pot-hooks.

The perfect insect appears in October and November.—WM. BUCKLER, Emsworth, *December 13th*, 1870.

Leucania vitellina at Torquay.—A specimen of this species, in good condition, has been sent to me from Torquay for identification, with the information that it was captured with another specimen, on November 5, 1870, at ivy flowers.

One was taken also on November 3rd, 1869, at Arbutus flowers, and another late in October, 1868, at ivy. These dates seem later than those previously recorded, but the moth sent to me has all its fringes perfect, as though it had not long been on the wing.—J. HELLINS, Exeter, *9th January*, 1871.

Triphæna subsequa in Gloucestershire.—I find, amongst my captures at sugar last season, a very perfect specimen of the above insect. I record its capture for the following reason : I had never seen a specimen of this insect ; but, wanting a single *Orbona*, to replace a damaged one in my cabinet, I took four amongst some twenty or so at sugar one evening, the brightest and perfect looking of the lot. It was set and put by in the store box. When I came at the end of the season to arrange my captures, the damaged *Orbona* was taken out and the new capture put in its place. Although I had never seen *subsequa*, I saw at once that the new moth

was not *Orbona*. *Subsequa* then thought I, it must be, so it proved. Now—may it not be that after all *subsequa* is not so very rare, but is passed over as *Orbona*? Mr. Crump, of Winchcombe, also took one—badly rubbed—last season. If I live till next summer, I will take every yellow underwing I come across.—E. HALLETT TODD, Northleach, January, 1871.

Notes on the genus Eupithecia.—I was agreeably surprised, whilst searching the seeds of *Angelica sylvestris* in this neighbourhood last September for larvæ of *E. trisignata* and *albipunctata*, to find, feeding with them, several larvæ of *pimpinellata* in two varieties. I could not find their ordinary food, *Pimpinella saxifraga*, there at all: they fed up on the former unsavoury plant, and are now in pupa. I also found on the *Angelica* seeds, not uncommonly, larvæ of *centaureata*, and of that polyphagous creature, *castigata*. There also occurred, on the same seeds, several very beautiful larvæ, evidently of this genus, which I cannot make out; they may be only *centaureata*, but I hope for something better.

While writing on this interesting genus, I may say that Mr. Prest, of this city, and I, have taken the larvæ of twenty-two species, viz.:—*venosata*, *pulchellata*, *centaureata*, *subfulvata*, *lariciata*, *castigata*, *trisignata*, *virgaureata*, *albipunctata*, *valerianata*, *pimpinellata*, *fraxinata*, *indigata*, *nanata*, *subnotata*, *vulgata*, *absynthiata*, *minutata*, *assimilata*, *tenuiata*, *abbreviata*, *rectangulata*, and the allied *Collix sparsata*, of which I have reared a second brood.—T. J. CARRINGTON, 31, Holgate Road, York, November, 1870.

Captures of Lepidoptera near Lewes during 1870, arranged chronologically.—April 8th, *T. miniosa*, *S. satellitia*, *C. vaccinii*, on willows; 14th, *T. populeti*, one, *T. munda*, one, *H. croceago*, several, *T. miniosa*, one, on willows, *T. piniperda*, one, on a fir trunk—some of the *H. croceago* and *C. vaccinii* in cop.; 20th, *A. derivata*. May 24th, *C. temerata*, *L. viretata*, *E. omicronaria*, at dusk. June 2nd, *E. orbicularia*, at rest, *Eup. plumbeolata*; 4th, *A. betularia*, at rest; 6th, *Cr. chrysomuchellus*, common, *H. genistæ*, at sugar; 9th, *P. globulariæ*, only one, *Eup. venosata*, *M. anceps*; 10th, *A. promutata*, *A. megacephala*, *G. trilinea* var. *bilinea*; 11th, *M. Athalia*, *M. hastata*, *T. chærophyllata*, *M. fuciformis*, *L. testudo*, *N. plantaginis*; 14th, *P. vitalbata*, *P. tersata*, *C. porcellus*, *N. saponariorum*, *D. conspersa*, *D. carpophaga*, *P. chrysitis*, *M. anceps*, over flowers, at dusk; 15th, *C. silaceata*, *A. prunaria*, *E. porata*; 16th, *P. Geryon*, commonly; 20th, *A. rubidata*, *H. serena*; 23rd, *A. luteata*; 24th, *A. tinctoria*, *L. turca*, at sugar; 30th, *O. sambucata*, *R. sericealis*. July 1st, *A. aceris*, *G. papilionaria*, one; 3rd, *A. Galathea*, common; 7th, *Cr. falsellus*, over mossy thatch, *Eup. subnotata*; 8th, *X. subulstris*, *C. blanda*, on sugar; 14th, *I. vernaria*, *M. rubiginata*; 15th, *L. turca*, *A. ligustri*, *E. viminalis*, *H. derivatis*, rather commonly at dusk, and on sugar; 13th, *T. fimbria*; 18th, *P. syringaria*, *T. dumetana*; 19th, *L. chrysorrhæa*, *L. salicis*, on lamps; 25th, *P. stratiotatis*, on lamps; 27th, *Botys flavalis*, *C. angustalis*, one. August 3rd, *G. obscurata*, white variety; 4th, *C. diffinis*; 5th, *H. comma*; 8th, *A. puta*, *A. gemina*, *C. Cytherea*, *L. griseola*, *M. literosa*, on sugar; 10th, *C. graminis*, *L. testacea*, *S. Semele*, on sugar; 24th, very bad specimen of *D. galii* brought—it laid two eggs which shrivelled up. September 15th, *A. australis*, *L. cespitis*, one, on grass; 18th, larva of *D. galii* brought to a friend, also a worn *S. convolvuli*, the only one I have heard

of in this locality this season; 19th, *H. protea*, *C. diluta*, *C. vetusta* (1), on sugar; 23rd to October 7th, *P. empyrea*, on sugar and ivy bloom; 23rd, *A. saucia*, on sugar; 30th, *A. rufina*. October 12th, *A. rhizolitha*, one, on sugar; 14th, *A. saucia*, on sugar; 28th, *S. satellitia*, *C. spadicea*, &c., abundant.—J. H. A. JENNER, Lewes, December 3rd, 1870.

Captures of Lepidoptera near Battle during 1870, arranged chronologically.—February 26th, *H. rostralis*, *G. libatrix*, hibernating; 28th, *G. rhamni*, *H. rupicaprarua*. March 2nd, *V. Io* and *urticae*; 22nd, *T. miniosa*, one bred from pupa dug. April 3rd, *T. gothica*, one, on sallow bloom, by day, *T. hyemana*; 8th, *T. munda*, on sallows; 9th, *T. miniosa*, one, on a hedge; 15th, *H. croceago*, one, on sallows; 16th and 18th, *B. notha*, three ♀ specimens flew up from damp ground; 16th, *X. petrificata*, one, flying; 14th, *T. leucographa*, one, on sallows. May 15th, *A. Baumanniana*, *V. polychloros*, several hibernated specimens flying over elms; 23rd, *T. Tages*, *Eup. coronata*. June 4th, *C. duplaris*, *H. thalassina*, on sugar, *P. falcula*, flying, *C. silaceata*, one, *A. leporina*, one, *B. consortaria*, one, at rest on fir trunks; 6th, *C. plantaginis*; 11th, *C. fluctuosa*, flying over birch bushes, *A. sylvata*, common, *T. Batis*, *T. extersaria*, *B. consortaria*, *B. lancealis*, *P. lacertula*, flying, *G. trilinea* var. *bilinea*, *A. tineta* and *E. lucipara* on sugar; 13th, *Z. trifolii*, common; 18th, *M. notata*, *E. heparata*, *P. falcula*, *H. prasinana*, *C. fluctuosa*, *C. duplaris* and *A. porphyrea*, flying; 19th, *B. consortaria*, one, *Eup. linariata*, one, on fir trunks; 25th, *Cr. pinetellus*, *M. notata*, *P. lacertula*, *C. fluctuosa*, *B. mesomella*, flying; 26th, pupæ and larvæ of *V. polychloros* on and near elms; 27th, *A. villica*, *A. prunaria*, *C. corylata*, *C. mesomella*, *N. dodonæa*, one, on palings. July 2nd, *M. miniata*, *B. repandata* var. *conversaria*, two specimens, *C. picata*, *M. albicillata*, flying, *A. tineta*, at sugar; 9th, *L. testudo*, one, flying at dusk, *H. derivalis*, two, *G. papilionaria*, one, *C. miniata*, *L. complana*, *C. obliquaria*, one, *P. syringaria*, *A. emarginata*, at dusk, one of the *C. miniata* a very fine yellow variety; 7th, *C. mesomella*, *T. derasa*, *P. bajularia*, *C. ligniperda*, *X. polyodon*, one black variety; 16th, *Nola strigula*, two, on sugar, *H. derivalis*, on sugar, *P. stramentalis*, one, *L. complana*; 17th, *A. Iris*, damaged specimen brought me. August 6th, *C. nupta*, at sugar, *N. baja*, *N. Dahlii*, on heath and other bloom; 13th, *T. retusa*, one, flying, *E. pendularia*, one, *P. interrogationis*, flying, surely a very southern locality? 24th, *C. diluta*. October 8th, *A. macilentia*, *S. satellitia*, &c., on ivy bloom.—ID.

Review.

THE PROCEEDINGS OF THE "PERTSHIRE SOCIETY OF NATURAL SCIENCE" FOR SESSION 1869-70.

The example shewn by this Northern Society is worthy of emulation by other and longer instituted local associations. Although only three years old, it contrives to issue a creditable little volume of "Proceedings," embodying much local information and some that will interest Naturalists as a body. Under the auspices of its President, our well-known contributor, Dr. Buchanan White, entomology takes a very prominent position, which it should do, considering that the far-famed Rannoch district comes within its area. A paper by Dr. White on the Butterflies of Perthshire is of great interest: from it we learn that 29 out of the 35 Scotch

species are found in the county; but what a contrast to the 77 Scandinavian forms! Another paper on the minute division of the district is a good lesson on the method in which a limited area should be thoroughly worked, and should put to shame those of our Metropolitan collectors who hold that discoveries made by them should be confided only to their immediate circle, and that those who have not the privilege of their confidence should only reap such benefit (?) from them as the possessors of the "secret" choose to divulge. We would, however, caution our provincial friends against the chance of their ideas becoming too narrow: extreme localisation for a long time caused British entomologists to remain a laughing-stock with their Continental brethren.

THE SCOTTISH NATURALIST, and Journal of the Perthshire Society of Natural History; edited by Dr. BUCHANAN WHITE. Perth, The Society; Edinburgh, MacLachlan and Stewart.

We have before us the first quarterly part of this new periodical, which is intended to supersede the "Proceedings" noticed above. It extends to 32 pages, is well printed and edited, and should take a prominent position in Natural History serial literature. We give it a cordial welcome and our best wishes. The opening paper is one by Dr. Lauder Lindsay on "Natural Science Chairs in our Universities," ably written, but scarcely, we think, in good taste. There are many notices on Zoology (especially Entomology) and Botany, and copious reports of the Meetings of various Scottish Natural History Societies; concluding with the first part of an exhaustive paper by the Editor on "Sugaring." We were scarcely prepared, even in a Scottish journal, to find *whisky* mentioned as a probable substitute for *rum*, in concocting the bait. But, possibly, Scottish *Noctue* have Scottish peculiarities. We are careful not to say that the "Dew off Ben Nevis" is useless, because, when we recently mildly suggested to a German friend that "beet-sugar" was of little avail, we were met by the sarcastic remark (Stett. Ent. Zeit., 1871, p. 95) that "Die englischen Noctuen bewiesen aber darin sehr feine Nasen, dass sie zwischen Runkelrüben und Rohr-Zucker sehr genau unterschieden."

Obituary.

The Rev. Edward Horton.—On the cover of our December number we briefly announced the death of this gentleman, which took place at Exeter on the 9th November, at the age of 55, after some considerable period of very bad health. For some years he was engaged in tuition as a private schoolmaster at Worcester, and afterwards became the chaplain of the County Lunatic Asylum at Powick near that town, a position he retained up to his forced resignation through failing health. As a Lepidopterist he was widely known and universally respected, and the extreme liberality with which he supplied all the principal collections with *Toxocampa cracca*, discovered in Britain by him, is an example which might be followed to their advantage by some of our collectors. He was a Member of the Worcestershire Natural History Society, and took an active part in the formation of the Society's Museum, illustrating the Natural History of the county. He was also engaged on a list of the Worcestershire *Lepidoptera*, but we are uncertain if it were ever published. The earlier volumes of this Magazine, and the previously existing entomological periodicals, testify both to his activity and keenness of observation;

and those entomologists who had the pleasure of his personal acquaintance have reason to deplore the loss, in him, of an amiable friend. Mr. Horton leaves a widow, two sons, and three daughters. To his fellow-townsmen, Mr. Fletcher, we are indebted for several particulars in the foregoing short notice.

The Rev. J. F. Dawson.—Of this "Geodephagist," whose somewhat premature decease, on the 16th October last, was briefly recorded on the cover of our November issue, little can be said that is likely to be unknown to any British Entomologists, as his insect love and labours were (with the exception of an attachment to the *Curculionidæ*) entirely devoted to the beetles described in his well-known "*Geodephaga Britannica*," the publication of which was the first step towards freeing us from isolation, and which, considering the state of Entomological science here at that time, is certainly deserving of the highest encomium;—all that can be said against it being that the author's views were, perhaps, in some cases, a little too synthetical; and that there was scarcely sufficient *comparative* descriptive matter in it. Although anticipated in two of his species of *Dyschirius* (a difficult genus,—and at that time still more so,—for which he had an especial liking), his *D. impunctipennis*, *Trechus lapidosus* and *Bembidium Clarkii* will survive to keep him in memory,—if his *Stenolophus derelictus* should fail to be established. Mr. Dawson retained to the last his love for the *Geodephaga*; but, his eye-sight having for some time been failing, he was compelled to abandon even the pretence of working; and, not being able to keep in the foremost ranks through this infirmity, he withdrew from all communication with his fellows. Beneath his personal eccentricity, he had very many estimable characters; and it may also be noted that his proficiency as a Hebrew scholar was very considerable, taking into account the small favour in which that study was held by the community until very recently. His book entitled "*Old Testament Events*," contains much that is able and ingenious, though some of the conclusions therein deduced might not find general acceptance.

ENTOMOLOGICAL SOCIETY OF LONDON, 2nd January, 1871.—A. R. WALLACE, Esq., F.Z.S., President, in the Chair.

A. M. Ross, Esq., M.D., of Toronto, was elected a Member.

Mr. Butler exhibited species of *Lepidoptera* forming part of a collection sent to Mr. Swanzy by Mr. Ussher, from Fantee, West Coast of Africa. Amongst them was a large species of *Brahmæa* allied to *B. Lucina*, which Mr. Butler proposed to call *B. Swanzyii*, also two instances of mimicry amongst butterflies, viz., *Godartia Eurynome* and *Danaïs Leonora*, and *Mylothois Agathina* and *Belenois Sylvia*. The latter case being one of resemblance between two species of the same family, Mr. Bates suggested it was a case of affinity rather than positive mimicry.

Mr. W. C. Boyd exhibited varieties of several familiar species of British *Lepidoptera*; one of the most remarkable being a strange dwarf form of *Porthesia auriflua*.

Mr. Verrall exhibited a specimen of *Plusia interrogationis* captured at Battle, Sussex, by Mr. Jenner (see p. 214), the species being almost exclusively northern in its habits in this country.

Mr. Hewitson communicated "*New Species of South American Diurnal Lepidoptera.*"

DESCRIPTION OF A NEW GENUS AND SPECIES OF STAPHYLINIDÆ
(FROM SOUTH AUSTRALIA).

BY D. SHARP, M.B.

SARTALLUS: *Gen. nov. Staphylinidarum (Oxytelini).*

Corpus latum, robustum, haud depressum, alatum. Caput thorace minus et angustius, porrectum, basi vix constrictum, oculis semi-globosis, modice prominulis. Labrum transversum, medio emarginatum, margine antico dense setigero. Mandibulæ prominentes, acuminatæ, irregulariter dentatæ. Maxillæ malâ interiore margine exteriori coriaceo, interiore membranaceo, apicem versus spinulis octo, et pubescentiâ nonnullâ instructâ; malâ exteriori longiore, coriaceâ, apice longe et dense pubescente. Palpi maxillares malâ exteriori parum longiores, articulo primo minuto, secundo elongato-obconico, tertio hoc vix longiore, quarto minuto, subulato. Labium ligulâ late emarginatâ, sub-bilobatâ, paraglossis occultis. Palpi labiales articulis duobus primis sub-æqualibus, tertio minuto. Antennæ fractæ, breviusculæ, articulo primo elongato, ultimis tribus præcedentibus distincte majoribus. Elytra truncata, apice ciliata. Abdomen latum, haud cylindricum, marginatum. Pedes tibiis anticis evidenter incrassatis, geniculis constrictis, externe fortius breviter spinulosis, intermediis et posticis spinulis longioribus, inter spinulas setulosis. Tarsis omnibus quinque articulatis; articulo primo obsoleto, a tibiâ oblecto, tribus sequentibus brevibus, ultimo elongato, præcedentibus conjunctis longiore.

This remarkable insect, though much allied to *Bledius*, has an entirely different and very peculiar appearance; its broad, robust, and quite uncylindric, but somewhat convex form giving it a facies peculiar to itself. Its tarsi might well be supposed 4-jointed; but, when mounted in balsam, and examined with a good microscope, a fifth small basal joint, concealed by the tibia, is distinctly revealed. A specimen sent by me to M. Fauvel was returned by him as probably belonging to the *Nitidulidæ*; an opinion which he must have formed, however, on a very slight examination.

S. SIGNATUS. *Testaceus, oculis nigris, elytris medio plus minusve distincte piceo-signatis; capite prothoraceque nitidis, fortiter haud crebre punctatis, elytris sub-opacis, apice ciliatis, vage punctatis.*

Mas; abdominis segmenti septimi ventralis lateribus utrinque hamato-productis, acuminatis.

Long. 2½ lin.; lat. 1 lin.

Testaceous, with the elytra paler. Antennæ with the basal joint elongate, about as long as the four or five following together, second and third joints cylindric, the second longer than the third, this longer than broad, 4—8 differing little from one another, each about as long as broad, the last of them a little stouter than the others, 8—11 considerably broader and longer than the preceding joints. Head with a projection on each side over the insertion of the antennæ, coarsely and irregularly punctured. Thorax shining, sub-cordate, not quite so long as broad, the sides rounded in front, the posterior angles rather obtuse, coarsely and irregularly punctured. Elytra longer than the thorax, not shining, with a common broad, pitchy, angulated mark, sometimes entirely wanting; coarsely but irregularly, and towards the apex obsoletely, punctured; the apex furnished with long, closely set ciliæ. The hind body sparingly punctured.

I have received this insect from Mr. Edwards: it inhabits South Australia; and from its appearance I suppose it lives in sandy places on the coast.

Thornhill, Dumfries,
February, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 1).

BY H. W. BATES, F. Z. S.

Genus ABARIS, Dejean.

This genus, compared, as regards *facies*, with *Pogonus* by Dejean, is placed in Gemminger and v. Harold's Catalogue near *Platynus*. I think its true place is near *Drimostoma* and *Abacetus*, among the restricted *Feroniinae*. The tooth of the mentum, described by Dejean as "simple et presque obtuse," approaches in reality the bifid form assumed in *Feronia*, its surface at the tip being indented, and the broad tip, in consequence of this indentation, being sub-emarginated. The species composing the genus are of small size, not unlike *Bradytus* in shape, but with more slender legs and with prominent eyes. The surface of their body is polished and glabrous, free from punctuation, and of coppery or brassy colour. The antennæ vary in length and robustness, but their fine pubescence begins only with the tip of the 4th joint, and the apex of the basal joint bears a large setigerous puncture. The mandibles are prolonged, acute, and curved at the point, without teeth. The head has two setigerous punctures on the inner margin of the eye, but the hind one is sometimes wanting, and there is always a similar puncture on each side of the epistoma. The elytral striæ are all sharply marked, the lateral ones sometimes deeper and converging before the tip, giving the insects a close resemblance to the genus *Notiobia* of the *Anisodactylinae* group, with which they

also agree in the prominent eyes, in form, and in colours. The short scutellar stria is very variable; but all the species have a single large puncture on the disc a little behind the middle. The prosternum has a slight raised rim at the apex, and is destitute of hairs. The middle ventral segments have, very generally, a transverse groove, visible chiefly at the sides. The three basal joints of the anterior tarsi of the ♂ are moderately dilated, triangular, with the angles rounded, and furnished beneath with two divergent rows of pectinated *squamæ*, in some cases much elongated.

Two species of the genus only have been hitherto described, differing from any of the following. All are found in Tropical America, under rotten, dead leaves, in dry situations in the forest, and run with great swiftness.

ABARIS ROBUSTA, n. sp.—*Oblongo-ovata, latiuscula, læte æneo-cuprea, nitida, partibus oris, antennis, pedibus et ventro piceis; capite thorace dimidio angustiori; thorace transverse quadrato, lateribus præsertim prope angulos anticos rotundatis, basi utrinque bifoveolato et prope angulum punctato; elytris fortiter striatis, striis exterioribus paulo profundioribus, interstitiis subæqualibus, stria abbreviata basali quarta inter strias 1^{am} et 2^{dam}; pectore nigro, interdum corpore infra toto rufo-piceo; ventro transversim sulcato.*

Long. 4 lin. Lat. elytr. $1\frac{3}{4}$ lin. ♂ ♀. 10 exempl.

A large, robust species, found generally throughout the Amazons, but not common. The general colour above is a glossy, æneous-coppery, the head and thorax and sides of elytra being often somewhat greener. The short basal stria does not approach either the 1st or 2nd stria. All the striæ are sharply marked, in some places almost sulcate, and the lateral interstices are not much narrower than the inner ones. The antennæ are short, much thickened, and sub-moniliform towards the tips, the third joint not much longer than the 4th. The 4th—6th ventral segments have a sharp transverse groove near their anterior border, and not reaching the lateral margin.

ABARIS PICIPES, n. sp.—*Gracilior, oblonga, nigro-ænea, splendida, elytris cupreis, antennis pedibusque piceo-rufis, oris partibus rufis, abdomine apice rufescenti; capite thorace paulo angustiori; thorace transverse quadrato, lateribus antice rotundatis, basi utrinque bifoveolato et sparissime grosse punctato; elytris fortiter striatis, interstitiis dorsalibus paulo latioribus et planioribus; ventro haud sulcato.*

Long. 3 lin. Lat. elytr. $1\frac{1}{2}$ lin. ♀. 1 exempl.

Very similar in sculpture to *A. robusta*, but smaller, narrower, and more parallel, the head especially proportionally much larger, being

only a little narrower than the anterior part of the thorax: the abdomen is reddish only at the extreme apex, and there is no appearance of a transverse groove on the ventral segments. The thorax is rounded and narrowed anteriorly, but the sides from the middle to the base are straight.

I have retained for my own collection only one example of this species, which is peculiar to the banks of the Tapajos, Amazons.

ABARIS NOTIOPHILOIDES, n. sp.—*Oblongo-ovata, cupreo-cænea, nitida, partibus oris, antennis et pedibus flavo-testaceis, ventro rufo-piceo; capite thorace paulo angustiori; thorace transverse quadrato, basi utrinque grosse denseque punctato et bifoveolato; elytris profunde striatis, interstitio 3^{io} cæteris duplo latiori, stria abbreviata nulla; ventro haud transversim sulcato.*

Long. $2\frac{1}{3}$ — $2\frac{1}{2}$ lin. Lat. 1 lin. ♂ ♀. 5 exempl.

The wide and glossy 3rd insterstice of the elytra, and the prominent eyes, remind one of the species of *Notiophilus*. There is, however, no other resemblance between the insects.

Found at Ega, Amazons, in company with *A. robusta*.

ABARIS STRIOLATA, n. sp.—*Oblongo-ovata, cupreo-cænea, nitida; partibus oris, antennis, ventris apice et pedibus flavo-testaceis; capite thorace paulo angustiori; thorace transverse quadrato, basi utrinque impunctato, distincte bifoveolato; elytris fortiter striatis, interstitiis subæqualibus, stria abbreviata basali valde notata et elongata; ventris segmentis 4—5 transversim sulcatis.*

Long. $2\frac{1}{2}$ lin. Lat. elytr. $1\frac{1}{8}$ lin. ♂ ♀. 3 exempl.

Closely resembling the preceding in general form and colour, but differing in many essential points, especially the absence of punctuation from the hind angles of the thorax, and the equal width of the elytral interstices, &c.

Found in company with it at Ega, Amazons.

ABARIS TACHYPOIDES, n. sp.—*Facies Tachypi Bembidiidarum, elongata, capite thoracis latitudine, oculis valde prominentibus; cænea, nitida, partibus oris, antennis et pedibus flavo-testaceis; thorace angustiori, quadrato, lateribus præcipue antice valde rotundatis, basi toto sparsim punctato, utrinque bifoveolato; elytris sulcato-striatis, interstitiis subæqualibus; ventris segmentis intermediis transverse sulcatis.*

Long. $2\frac{3}{4}$ lin. Lat. elytr. 1 lin. ♂. 2 exempl.

A slender species, with large head, prominent eyes, and thorax not wider than the head, and much rounded on the sides, especially anteriorly. The facies is that of the species of *Tachypus*.

Rare, at Ega; Amazons.

CALOPHENA VIRIDIPENNIS, n. sp.—*Elongata, testaceo-rufa, elytris læte viridi-cyaneis subsericeis, geniculis, tibiis et tarsis nigro-piceis; capite ut in C. acuminata rhomboideo, post oculos modice elongato et recte angustato; thorace quam in C. acuminatâ paulo latiori, elongato, nitido, angulis posticis valde productis sed haud acuminatis; elytris fortiter striatis, interstitiis impunctatis, apice oblique truncatis, angulo exteriori breviter dentato, suturali longe aculeato; antennis fuscis, basi testaceo-rufis.*

Long. 5 lin.

A most beautiful species of this curious genus, distinguished from all others by the metallic uniform colour of the elytra.

One example, from Pebas, Upper Amazons.

CTENODACTYLA FOVEATA, n. sp.—*C. Chevrolatii affinis, major, tota fusco-cenea, nitida, capite post oculos longiori; thorace angusto, antice angustato, medio paulo rotundato-dilatato, supra grosse punctato; elytris viridi-fusco-ceneis, fortiter crenato-striatis, interstitio 3^{io} quinque- 5^{to} trifoveato; prosterni episternis crebre grosse punctatis; antennis, art. 1—3 obscuris exceptis, testaceo-rufis; pedibus nigro-piceis.*

Long. 5½ lin. 1 exempl.

In the form of the head, gradually and rectilinearly narrowed behind the eyes, this species resembles *C. Batesii*, Chaud., but the thorax is much narrower, and is distinguished by being broadest about the middle, and gradually narrowing both before and behind. The interstices of the elytra are rather convex, and the large setigerous punctures unusually well marked. It is, apparently, most closely allied to *C. Drapiezii* of Gory, in which, however, the head and thorax are of a reddish colour.

Taken at Ega.

CTENODACTYLA GLABRATA, n. sp.—*C. Chevrolatii similis, capite post oculos thoraceque longioribus, prosterni episternis impunctatis; nigerrima, nitida, thorace rufo impunctato, antennis (basi obscuris) femoribus basi, trochanteribus, metasterni medio tarsisque rufescentibus; elytris fortiter punctato striatis, interstitiis subplanis.*

Long. 5 lin. 2 exempl.

Distinguished from *C. Chevrolatii* by the more intense black colour of the head and elytra, besides its black legs and impunctate polished thorax and prothoracic episterna.

Apparently not uncommon on the banks of the Ucayali, whence Mr. Edw. Bartlett brought a considerable number. *C. brasiliensis*, Lucas, from the same locality, differs by its red legs and black knees.

CTENODACTYLA DEPRESSA, n. sp.—*Species egregia, valde depressa, antennarum articulo basali valde elongato. Depressa, nigra, nitida, capite thorace et dimidio basali antennarum testaceo-rufis; capite ut in C. Chevrolatii post oculos rotundato-angustato; thorace elongato, postice viâ angustato, antice paulo rotundato, supra impunctato; elytris punctato-striatis, interstitiis paulo convexis, 3^{io} quadri- 5^{to} bi-forcato; prothorace subtus impunctato; tarsorum articulis 4—5 rufo-testaceis.*

Long. $5\frac{1}{4}$ lin. 1 exempl.

Beyond the singular elongation of the basal joint of the antennæ this curious species offers no character to warrant its separation from *Ctenodactyla*. It inhabits the close fitting folds of large aquatic grasses in which species of *Cephaloleia*, and other flattened forms of *Hispidae*, lie concealed in great numbers. *C. Chevrolatii* and *puncticollis* I always found within the sheathing bases of leaves of Indian corn in plantations.

Ega.

LEPTOTRACHELUS CRUCIATUS, n. sp.—*Ab omnibus speciebus adhuc descriptis differt corpore haud lineari, elytris oblongo-ovatis. Testaceo-rufus, elytris fascia basali alteraque ultra medium (ad suturam postice dilatata) per lineam suturalem conjunctis fuscis; capite postice recte angustato, thorace breviter oblongo, lateribus antice paululum rotundatis, angulis posticis acutis, prope angulos punctato; elytris basi latis, rectis, pone medium rotundato-dilatatis, supra fortiter punctato-striatis, interstitiis convexis, 3^{io} quadri- 5^{to} uni-forcato; tarsis latioribus, robustioribus, articulo 4^{to} lobis elongato-ovatis.*

Long. $4\frac{3}{4}$ lin. 1 exempl.

Differs from all previously described species in its ovate form, especially of the elytra, and in the shorter and broader tarsi. The claws, mentum, and other parts are, however, formed precisely as in *Leptotrachelus*; and it possesses also a characteristic feature, hitherto omitted in descriptions of this genus, namely, an acute wedge-shaped projection of the prosternal process, on a lower plane than the usual apex of that organ.

On trees; Ega.

LEPTOTRACHELUS BIFASCIATUS, n. sp.—*Præcedenti valde affinis, differt elytris fasciis duabus nigris per suturam haud conjunctis. Elongato-ovatus, testaceo-rufus, nitidus; thorace oblongo, lateribus antice leviter rotundatis, postice utrinque punctato, disco glaberrimo, angulis posticis rectis; elytris oblongo-ovatis, punctato-striatis, fascia basali, alteraque ultra medium ad suturam paulo dilatata, nigris.*

Long. 5 lin. 1 exempl.

Peru; obtained from the collection of the late Rev. Hamlet Clark.

HELLUOMORPHA GLABRATA, n. sp.—*Magna, nigerrima, vix punctata vel setosa; capite lævi, linea curvata punctorum prope oculum; labro medio sinuato angulis valde rotundatis; palpis art. ult. magnis truncato-ovatis; thorace lateribus antice valde rotundato-dilatatis, postice valde sinuato-angustatis, angulis posticis productis, acutis, longe ante marginem posticum sitis, marginibus omnibus grosse punctatis, disco impunctato glaberrimo; elytris thorace multo latioribus, oblongo-elongatis, profunde striatis, striis vix perspicue sparsim subtiliter punctulatis, interstitiis politis, impunctatis, punctis magnis hic illic prope strias sparsis exceptis, margine laterali seriebus duabus punctorum et punctulato: corpore subtus nitido, passim sparse punctato.*

Long. 12 lin. Lat. elytr. 4 lin.

A fine large species distinguished from *H. heros* and *bellicosa* by the nearly impunctate and glabrous surface.

One example; Pebas, Upper Amazons.

HELLUOMORPHA JANUS, n. sp.—*H. sparsæ (Brullé) affinis, differt corpore supra nigro, infra cum margine inferiori elytrorum, partibus oris antennis et pedibus ferrugineo-piceis; corpore toto pubescenti; capite prope oculos grosse confuse punctato, labro antice medio obtuse producto, angulis lateralibus distinctis; thorace cordato, lateribus antice valde rotundato-dilatatis, postice valde vix sinuatim angustatis, angulis posticis haud productis, supra grosse sed haud dense punctato; elytris fortiter striatis, interstitiis convexis, singulis uniserialim juxta strias punctatis, duobus marginalibus confuse punctatis; corpore subtus punctato.*

Long. $6\frac{1}{2}$ lin. Lat. elytr. $2\frac{1}{4}$ lin. 1 exempl.

Ega.

HELLUOMORPHA OCULEA, n. sp.—*Nigra, passim dense pubescens; capite parvo, oculis maxime exsertis, orbitu postico angustissimo, collo angusto, supra sparsim lateribus densius punctato, labro medio paululum obtuse producto, cum palpis nigro-piceis; antennis piceis; thorace antice valde rotundato angulis anticis nullis, postice modice sinuatim angustato, angulis posticis obtusis, supra toto (præsertim lateribus) punctato; elytris fortiter striatis, interstitiis convexis, singulis biserialim punctatis; corpore subtus punctato.*

Long. $6\frac{1}{2}$ lin. Lat. elytr. $2\frac{1}{3}$ lin. 1 exempl.

Ega, Amazons. Found concealed in a folded leaf of a tree in company with an *Agra*. I several times met with *Helluomorphæ* in such situations, and believe them to be nocturnal insects.

HELLUOMORPHA SUBROSTRATA, n. sp.—*Elongata, nigra, breviter pubescens; capite nitido, fronte utrinque fovea magna grosse punctata, labro triangulari, medio valde producto et apice paulo deflexo; palpis maxill. art. ult. valde dilatato; thorace longiori, antice rotundato-dilatato, postice gradatim vix sinuatim angustato, pone angulos posticos acutos oblique truncato, supra grosse, dorso lineatim punctato; elytris thorace paulo latioribus, late striatis, interstitiis convexis, singulis fortiter biserialim punctatis.*

♂? *angustior, sublinearis.* Long. $5\frac{1}{2}$ lin. Lat. elytr. $1\frac{3}{4}$ lin.

♀? *latior, oblonga, modice elongata.* Long. $6\frac{1}{2}$ lin. Lat. elytr. $2\frac{1}{4}$ lin.

The beaked elongation of the labrum differs from the distinct central tooth which distinguishes the allied genus *Pleuracanthus*. The elytral striæ are broader than in the allied species, so that the two series of punctures on the sides of interstices might equally well be described as belonging to the striæ.

Ega.

HELLUOMORPHA LINEARIS, n. sp.—*Elongata, parallelogrammica, nigra, breviter pubescens; capite supra grossissime parce punctato, foveis frontilibus lævibus, collo crasso, labro triangulari medio valde producto et apice paulo deflexo acuto; thorace capite paulo latiori, lateribus antice modice rotundato-dilatato, angulis posticis rectis, supra grossissime æqualiter punctato; elytris thorace haud latioribus, elongatis, linearibus, fortiter striatis, interstitiis singulis biserialim punctatis.*

Long. 5 lin. Lat. elytr. $1\frac{1}{2}$ lin. 1 exempl.

Ega.

PLEURACANTHUS EBENINUS, n. sp.—*Pl. brevicolli (Dej.) valde affinis, differt statura multo majori angulisque posticis thoracis productis apice spinosis; oblongus, convexiusculus, aterrimus, nitidus, sparse pubescens; capite thorace paulo angustiori, vertice utrinque plagiatim grosse punctata, fronte foveis duabus grosse punctatis; labro transverso medio dente robusta; thorace brevi, valde transverso, lateribus postice sinuatim angustatis, angulis posticis productis, apice breviter spinosis, supra grosse punctato, disco utrinque convexo, lævi; elytris oblongis convexis, late striatis, striis biserialim punctatis, interstitiis 3^{io} 5^{to} et 7^{mo} punctis nonnullis majoribus, 8^{vo} multipunctato.*

Long. 9 lin. Lat. elytr. 3 lin.

Ega; one example.

Kentish Town: February, 1871.

NOTES ON SOME CORSICAN INSECTS.

BY REV. T. A. MARSHALL, M.A., F.L.S.

Having made two tours, each of about six weeks' duration, in the island of Corsica, and collected all orders of insects, I think a few indications of what is to be found there may interest some entomologists. The island has been seldom examined by English naturalists, but ransacked by French coleopterists and lepidopterists, and by a few more miscellaneous observers. M. Revelière has resided for some years in the island, and is well acquainted with its botanical and coleopterous productions; and last summer I met at Bastelica Messieurs E. Koziorowicz (ingénieur des ponts et chaussées) of Ajaccio, and E. Simon of Paris, the former bottling *Coleoptera*, and the latter *Arachnida*. The older researches of Rambur, Géné, Meyer-Dür, and others, are more or less known to readers of different journals.*

Corsica and its sister island Sardinia form the botanical centre of the Mediterranean district, characterized by the predominance of *Caryophyllaceæ* and *Labiata*, and whose limits extend from Portugal and the Canaries on the West, to the Caucasus and Lebanon on the East, and on the north and south from the foot of the Alps and Balkan to the borders of the Sahara. The *Articulata* of the same region correspond to its Flora; and in Corsica (of which alone I can speak) are to be found united many of the forms belonging to widely distant lands. Corsica consists of a mass of mountains, culminating in Monte d'Oro and Monte Rotondo, at a height of about 2,764 mètres—watered by various small torrents, and descending to the east in a sandy and malarious plain, interspersed with lagoons, and swarming with *Orthoptera*. The lower mountains are clothed with a uniform "bush" of aromatic shrubs, giving place at a greater height to magnificent forests of chestnut, cork-oak, and pine; the sun-burnt plains exhibit the usual semi-tropical vegetation of the shores of the Mediterranean, and the mouths of the rivers are tangled with the rankest growth of which plants are capable. From June to August, which was the limit of my rambles, the vicinity of the rivers affords the best ground for the entomologist—and his head quarters should be at Ajaccio. He will resort daily to the Campoloro, a most fertile marsh at the mouth of the Gravone, about three miles off, and replete with every convenience of shade, water, and varied vegetation—not without a slight suspicion of malaria. I shall mention some of the most noticeable insects which occurred to me, beginning with the *Coleoptera*.

* See also Dieck's "Ein Entomologischer Ausflug in die Berge Süd-Corsica's;" Berl. Ent. Zeit., 1870, p. 397 *et seq.*

Cicindela connata, Heer. *C. nigrita*, Dej. (black variety of *campestris* ?), forests, Bastelica. *C. littoralis*, F., swarming on sandy sea shores near the lagoon of Biguglia, Bastia. *C. litterata*, Sulz.—ibid.

Carabus morbillosus, F., mountains. *C. Genei*, Dej. *Culosoma sycophanta*, L., common, *C. sericea*, F., *Brachinus scelopeta*, F., *Aristus clypeatus*, Rossi, *Scarites arenarius*, Bon., *S. lævigatus*, F., *Epomis circumscriptus*, Duf., Ajaccio. *Chlœnius velutinus*, Dufts. *Licinus agricola*, Ol. *Acinopus tenebrioides*, Dufts, Cap Corse. *Harpalus incisus*, Dej. *Pterostichus Ziegleri*, Dahlb., *P. (Percus) loricatus*, Dej., *corsicus*, Dej., and *Ramburi*, Lep., St. Florent, under stones. *Pristonychus angustatus*, Dej. *Calathus circumseptus*, Germ., in colonies, Ajaccio. *Pogonus pallidipennis*, Dej. *Bembidium 4-pustulatum*, Dej.

Cyclonotum orbiculare, F.

Silpha granulata, Ol., in dead horses, Ajaccio. *Platysoma oblonga*, F. *Hister inæqualis*, F., *H. major*, L. *Paromalus parallelipipedus*, Hbst. *Saprinus chalcites*, Ill. *Plegoderus saucius*, Er. *Rhizophagus ferrugineus*, Pk. *Dermestes vulpinus*, F. *Tiresias serra*, F.

Lucanus barbarossa, F., chestnut forests, Bastelica.

Ateuchus sacer, L., *A. semipunctatus*, and *laticollis*, Fab. *Sisyphus Schæfferi*, L. *Gymnopleurus Sturmii*, McL., in *stercore humano*, innumerable. *Onitis hungaricus*, Hbst. *Onthophagus taurus*, L. *Oniticellus flavipes* and *pallipes*, F. *Geotrypes hypocrita*, Ill.; *G. geminatus*, Génè, the common mountain species; *G. levigatus*, F. *Rhizotrogus vicinus*, Muls. *Anoxia australis*, Sch. *Pachypus cornutus*, Ol., ♂ ♀ (♀ apterous), Bastelica. *Anomala Junii*, Dufts., on sandy shores, Bay of Ajaccio (peculiar to Corsica?). *Oryctes gryphus*, Ill., lower mountains; its parasite is the large *Scolia flavifrons*, Fab. *Oxythyrea stictica*, L. *Cetonia hirtella*, L., *C. sardoa*, Génè (two only), *C. morio*, F., common, *C. affinis*, Andersch., *C. floricola*, Hbst., *C. aurata*, L. (black, blue, and coppery varieties occur). *Trichius zonatus*, Germ., *T. fasciatus*, L.

Chalcophora Mariana, L., setting on pine logs, Forest of Vizzavona. *Capnodis tenebricosa*, F. *Dicerea ænea*, L. *Aneylochira flavomaculata*, F., and *A. rustica* and *octoguttata*, L., pine forests, Bastelica. *Anth(r)axia inculta*, Ger., and *A. nitida*, Rossi; several other species occur. *Ptosima novemmaculata*, L. *Acmæodera tæniata*, F. *Sphenoptera gemellata*, Man. *Chrysobothris affinis*, F. *Coræbus rubi*, L. *Trachys pygmæus*, F. *Adelocera carbonaria*, Schr., hatched in England from pupæ dug out of rotten pines, Forest of Vizzavona. *Elater crocatus*, Lap., under bark of pines. *Cardiophorus ulcerosus*, Génè. *Agriotes corsicus*, Cand.

Dictyoptera sanguinea, F., in flowers, foot of Monte d'Oro, and under rotten chips in forests, like *Eros Aurora*, F., in Scotland.

Lampyris sp.? near *mauritanica*, L.; ♂ abundant at Bastelica, flying into open windows at night; ♀ pale yellow. *Luciola italica*, L. *Telephorus corsicus*, Reiche.

Trichodes alvearius, F., and *T. apiarius*, L. *Sinoxylon sexdentatum*, Ol. *Apate capucina*, L.

Microdera pygmæa, Géné. *Tentyria angusticollis*, Sol., on sandy desert shores, Bay of Ajaccio. *Stenosis* (?) *angustata*, Hbst., under stones on the cliffs, Bonifacio: covered when alive with a blue bloom, easily rubbed off. *Acis punctata*, Thunb. *Blaps gigas*, L. (I saw one dead: the species was common at Blidah, Algeria). *B. gibbus*, Cast. *Asida corsica*, Lap. (under stones, summit of Monte Renoso), and *A. carinata*, Sol. *Pachyscelis quadricollis*, Lap. *Pimelia sardoa*, Sol., everywhere, in profusion. *Crypticus gibbulus*, Quesn., under stones, Bonifacio. *Pandarus tristis*, Lap., under stones, Bastia. *Pedinus meridianus*, Muls., frequent in sandy places. *Hopatrum corsicum*, Dej., and *rusticum*, Brullé. *Trachyscelis aphodioides*, Latr. *Phaleria cadaverina*, F., in dead horses, Bay of Ajaccio. *Platydemia europæa*, Lap., rare. *Pentaphyllus melanophthalmus*, Muls. *Uloma culinaris*, L. *U. Perroudi*, Muls., under pine bark, Forest of Vizzavona. *Hypophlæus ferrugineus*, Creutz. *Iphthimus italicus*, Truq. *Menephilus curvipes*, L., in pine forests, under bark. *Helops cæruleus*, L., and *H. superbus*, Muls., pine forests: taken by M. Revelière. *Nephodes villiger*, Rol. *Omophlus curvipes*, Muls. *Dircæa Revelierii*, Muls., rare. *Lagria hirta*, L., abundant in the mountains. *Notoxus monoceros*, L., Campoloro, crawling in sand. *Mordella bipunctata*, Germ., and several other spp. *Myodites subdipterus*, F., taken flying, twice: an extraordinary insect, resembling a fly of the genus *Beris*, magnified. *Meloë brevicollis*, Panz. *Mylabris*, a few species. *Zonitis præusta*, Fab., and one of a smaller species, apparently distinct. *Sparedrus testaceus*, Anders., common. *Nacerdes melanura*, L., *N. sardea*, Schmidt. *Edemera marginata*, F., *lurida*, Gyll., and *flavipes*, F.

Phytonomus philanthus, Ol., *P. tigrinus*, Dej. *Coniatus tamarisci*, F., abundant on every tamarisk. *Oleonus alternans*, Ol., *C. nanus*, Sch., *C. ocularis*, F. *Larinus cynaræ*, F., on thistles, Ajaccio; *L. scolymi*, Ol. *Lixus turbatus*, Sch. *Hylobius fatuus*, Rossi, pine forests. *Apion tubiferum*, Sch., *A. longirostre*, Ol., and other spp. *Attelabus atricornis*, Muls. *Sibynes attalicus*, Sch. *Nanophyes tamarisci*, Sch., Propriano, Golfe di Valinco. *Sphenophorus mutilatus*, Laich., Campoloro. *Sitophilus granarius*, L., in bags of oats. *Dryophthorus lymexylon*, F. *Bruchus imbricornis*, Panz., and other spp.

Phytæcia marginella, F. *Leptura hastata*, F., *L. testacea*, L.,

L. scutellata, F., &c. *Spondylis buprestoides*, L., forests. *Ergates faber*, L., rotten pine trees. *Criocephalus rusticus*, L. *Deilus fugax*, F. *Stenopterus rufus*, L. *Parmena* sp. ? burrowing in the sand, under sea-spurge, at Propriano ; common. *Morimus lugubris*, F., on fig trees and poplars, Ajaccio and Campoloro.

Crioceris asparagi, L. (var. *campestris*, Panz.). *Clythra taxicornis*, F., *C. centromaculata*, Géné, *C. longipes*, F., *C. leviuscula*, Ratz., *C. floralis*, Ol. *Cryptocephalus signaticollis*, Suffr., *C. populi*, Suffr., &c. *Stylosomus tamaricis*, Suffr. *Colaphus ater*, Ol. *Chrysomela americana*, L., Bonifacio, *C. stachydis*, Géné, *C. quadrigemina*, Suffr. *Lyperus flavus*, Rosenh. *Hispa atra*, L.

Coccinella 12-guttata, Poda, *C. 14-punctata*, L. *Exochomus auritus*, Scriba, *E. 4-pustulatus*, L. *Brumus desertorum*, Gebler. *Hyperaspis reppensis*, Hbst. *Epilachna chrysomelina*, F., on sea-spurge ; Bastia ; Bonifacio. *Platynaspis villosa*, Fourcr. *Scymnus*, several spp.

The above are all the hitherto named *Coleoptera* taken by me. The period of my visits was the worst in the whole year for a coleopterist. From February to April is probably the best, before the long rainless summer has set in. Even in January the butterflies are out near Ajaccio. The Corsican individuals of well-known insects differ from those of South France in their smaller size and duller colours. The number of species met with is much less, but on the other hand many of them are peculiar to the island. I propose to take the *Orthoptera* next, with which I have a somewhat better acquaintance than with the *Coleoptera*.

[To be continued.]

Observations on Peronia (Pterostichus) puncticeps and pauciseta, Thoms.—Dr. Kraatz (Berl. Ent. Zeits., 1870, p. 221 *et seq.*) introduces Thomson's descriptions of these two species (published in 1867) to Teutonic coleopterists ; and, whilst admitting that the acute Swedish author is certainly right, *pace* Dejean and Schaum, in establishing them, admits a preference (solely founded on long usage) for the Linnean name *cuprea* for the larger of the two (*puncticeps*),—which name, after some apparent indecision, he finally adopts at p. 229. It seems to me, however, alike unreasonable and unjust to reject Thomson's name. The description of *cuprea* by Linnaeus applies equally well (or, rather, badly) to two species, admitted by Kraatz to be certainly distinct, but the correct diagnosis of which has apparently escaped every one up to the present time but Thomson ; and this, although such authorities as Dejean and Schaum had specially studied the *Carabida*. Both species are so common, that there could be no special merit in discovering them,—still less in failing to discriminate between them ; and one of them (*pauciseta*, Th.) is, according to Kraatz, *l. c.*, without doubt, identical with the

long prior *versicolor* of Sturm, as proved, not by description, but by figure. Now, this very identification at the eleventh hour shows the value of Thomson's descriptions; for Sturm's insect has never (save, perhaps, by British Coleopterists, who adopted its name from Mr. Waterhouse's Catalogue, without any ground for so doing) been recognized as a species, for the simple reason that no recognizable description of it existed. Now, however, it is to stand, elucidated by the reflected light of Thomson's characters for *pauciseta*, applied to Sturm's figure of *versicolor*!

Dr. Kraatz makes no mention of Baron Chaudoir's expressed opinion (L'Abeille', t. v, p. 220, 1868) that *Pacilus versicolor* of Stephens is specifically distinct from *cupreus*; and the reference to 'Barbaria' as the fatherland of the former by Gemminger and v. Harold seems especially to puzzle him,—the interpretation of those authors' scheme for localities indicated at p. 247 of vol. v of this Magazine having evidently not occurred to him.

As an additional argument against the proposed retention of the Linnæan name for Thomson's *puncticeps*, it may be urged that so precise an entomologist as Chaudoir considers (*l. c.*) the insect known as *versicolor* to be probably the true *cupreus* of Linnæus!—E. C. RYE, 10, Lower Park Fields, Putney, S.W.

Note on further British examples of Cryptophagus Schmidtii.—This species, recorded by me in the last No. of this Magazine, has escaped prior notice through some inadvertence; for I now find that Mr. E. W. Janson many years ago took (and correctly determined) more than one specimen of it, most probably at Whittlesea.—Id.

Note on a new species of Amara (Celia) from Belgium.—M. Putzoys, in the Comptes-rendu (No. 56) of the Soc. Ent. de Belgique, has very recently described, under the name of *A. indivisa*, a species intermediate between *A. brunnea* and *A. rufocincta*, to which I think it advisable to draw attention, as the insect is not unlikely to occur in this country. The central tooth of the mentum in it is sharp and undivided, as in *brunnea*, to which it is not necessary here to compare it, as that species is not found in Britain. Compared with *A. rufocincta*, it is smaller, with the thorax more convex, much wider in front and more rounded laterally, and with the base of the elytra more strongly punctured.

M. Putzoys points out that the simple tooth of the mentum in *Aeredon* is reproduced in certain species of *Liocnemis* and *Bradytus*; and is, therefore, not reliable as a generic diagnostic.—Id.

Notes on Wiltshire Coleoptera.—A short visit to Wiltshire in June last afforded me the opportunity of picking up a few beetles, some of which I will enumerate, as they do not seem to be of every-day occurrence. The neighbourhood of Froxfield, on the western border of the county, was the part chiefly examined. In a wood called Stype, I found under logs *Pterostichus oblongopunctatus*, and on aspens *Erirhinus costirostris*, and *Crepidodera nitidula* along with *C. Helvines* in fine variety. *C. aurata*, I may remark, seemed to be confined to sallows, while *C. Chloris* occurred only on willows by the water-side, both there and at Windsor. In the same locality, by sweeping the herbage, *Aphthona atratula*, *Abdera bifasciata* and *Mordellistena parvula* were taken. In a water meadow a few specimens of *Erirhinus schirrhosus*

were secured, and one of *Pselaphus dresdensis*. *Gymnactron villosulum* was frequent on *Veronica Anagallis*. *Larinus ebeneus*, *Pachyrhinus 4-nodosus*, *Donacia affinis*, and *Graptodera lythri* were obtained in a marsh. At Figheldean on the Avon, I found *Aphodius arenarius*, *Rhinoncus inconspicuous*, *Cionus verbasci*, and *Phyllotreta ochripes* and *brassicæ*; and in Marlborough Forest, *Silvanus unidentatus*, *Ademonia cratægi* and *Anthrenus varius*.—ROBERT HISLOP, Blair Bank, Falkirk, December 28th, 1870.

Dryops femorata near Bristol.—This beetle occurs rather freely at Leigh. I meet with it nearly every year at ivy and sallow-bloom, as well as at "sugar." Should any readers of the Ent. Mo. Mag. want the species, I have no doubt I shall be able to supply them next April.—A. E. HUDD, Stapleton Road, Bristol, 10th January, 1871.

On the reniform "inner" gall of *Andricus curvator*, Hartig.—At pg. 39 of the present volume, I alluded to the "kidney-shaped" gall of this species.

At pg. 157, at the desire of Mr. Kidd, I called the same object the "kidney-gall."

At pg. 210, Mr. Kidd informs me, that the former term is an error of my own, that "the gall is not kidney-shaped, but the case it contains being reniform, "suggested to him the name of kidney-gall."

I hasten to inform Mr. Kidd that, in my opinion, "reniform case," "kidney-shaped gall," and "kidney gall," are terms of precisely the same meaning, if applied to the object under consideration, because this gentleman's "reniform case" is the true gall of the insect, for the following reasons:—it adheres by contact only to the green outer shell; in it (*i. e.*, the case) the larva is born, on its juices it feeds, within its circuit the insect passes its whole metamorphosis, and the first operation of the mature insect, on leaving the pupal skin, is to pierce the wall of the case, exactly like that of any other gall, *i. e.*, in the shape of a round hole.

The true function of this reniform case is so well understood, that the Germans have long ago coined a special term for it, viz., "inner gall," in contradistinction to the outer shell. The latter plays a very subordinate part in the economy of the insect, which only passes through it once when arriving at the mature state.

I trust I have now shown satisfactorily, that, after handling galls almost daily for many years past, I have not committed the error of calling one "reniform," when it is not so; and, although I have no particular fancy for popular names of galls when introduced by the learned, yet I am ready to agree with Mr. Kidd that they are a great convenience in the absence of a knowledge of the insects.—ALBERT MÜLLER, South Norwood, S.E., January 2nd, 1871.

What aid does the form of the Lepidopterous egg afford towards determining the position of certain species?—Lepidopterologists are not, as a rule, guilty of laying too much stress upon little things; indeed, it may be said with truth, that they have altogether neglected to avail themselves of almost any characters but those afforded by "colour of wings, streaks, spots, &c." It thus happens, I suppose, that, till within a very recent period, no attempt has been made to turn to account the characters presented by the form of the eggs, and these beautiful objects have

been altogether neglected. The papers upon the ova of certain species of *Acidalia* and *Eunomos*, published by Mr. Hellins in this Journal, prove what good characters are afforded, in some cases, at least, by the form and size of the eggs. That the differences of form should give some assistance in determining the position or family of certain species, it is my object in this note to suggest; and as instances, I will select the cases of *Asteroscopus nubes*, *A. cassinia*, *Diloba ceruleocephala*, and *Demas coryli*. The majority of, if not all, British authors have considered that these species should be placed among the true or false *Bombyces*, but Herrich-Schäffer, and some other European entomologists, have thought that their true position is among the *Noctue*. What aid then does the form of the eggs of these moths give us in trying to determine the question? The *Notodontidæ*, in which family *Asteroscopus* and *Diloba* are generally placed, have smooth eggs, with scarcely any sculpture, and not at all resembling the usual *Noctua*-type of egg, but these two genera have ribbed eggs (as have the majority of the *Noctue*)—that of *Diloba* especially resembling in shape the eggs of some of the *Bombycoideæ*. With the egg of *Demas* I am not acquainted, but it probably differs in form from the eggs of the *Liparidæ*, and resembles the *Noctua*-type.

There is nothing, I believe, in the structure of the larvæ of these three genera which would forbid their being placed among the *Noctue*; while the perfect insects resemble *Noctue* far more than they do *Bombyces*, the stigmata and some of the lines—so characteristic of the *Noctue*—being, except in *A. cassinia*, well defined. Why, therefore, these four species should be retained in the position they at present hold in the list of British *Lepidoptera*, I cannot, for my own part, see.

Herrich-Schäffer places *Demas* and *Diloba* in the *Bombycoideæ*, and *Asteroscopus* in the *Orthosilæ*, between *Trachea* and *Tethia*.—F. BUCHANAN WHITE, Perth, 20th December, 1870.

On the food-plant of Homæosoma savicola.—With reference to Mr. Howard Vaughan's note on the food-plant of this species, I may mention that some larvæ, very probably belonging to this species, found by me in Galloway, fed in the heads of *Matricaria inodora*, *Senecio Jacobæa*, and *Achillea millefolium*.—ID.

On the sound to be produced by Halias prasinana.—Seeing in the "Annual" for this year a notice of the squeak said to be produced by this moth, I take the liberty of writing to state my belief that the insect (♂ or ♀, or both) does squeak, and with more reiteration than a bat. Some years since, when at St. Catharines, Argyleshire, I heard a strange twittering in the air, which, to the best of my belief, proceeded from two specimens of *prasinana* which came fluttering down from the foliage.—A. H. SWINTON, 7, Portsdown Road, Maida Hill, January, 1871.

* * * Mr. Swinton has dissected specimens of the insect, and sent us drawings and descriptions of a structure between the thorax and abdomen, by which he believes the sound to be produced. As there is no apparent external tympanum, such as exists in *Setina*, &c., and as the dissections were made from dried specimens, we have not re-produced them, but urge upon him and others the advisability of examining the living insect during next season, so as to set the question at rest.—EDS.

Notes on the egg and young larva of Thecla rubi.—The capture of the larva of this species by Messrs. W. H. Harwood and C. G. Barrett, enabled Mr. Buckler to describe it in various stages of growth at p. 38 of Vol. vi of E.M.M. And to the knowledge of its proper food-plant, thus obtained, I owe it that I am enabled now to offer a description of the egg. In former years I have shut up as many as twenty imagos at one time, and though I furnished them with blackberry buds and blossoms, as well as with other flowers and plants, I could never get an egg. But this last summer I caught a single wasted female, and having put her in a cylinder with a few twigs of broom (*Cytisus scoparius*), obtained from her half-a-dozen eggs immediately.

The butterfly was caught, and the eggs laid on June 17th; the larvæ were hatched on the 24th; I have one or two notes of various moults, but finding by the middle of July that Mr. Buckler had already anticipated all that could be said after the larva had attained any size, I ceased from making any further record.

The egg is roundish, full and globose, but with a central depression on the upper surface; green in colour, but covered all over with a reticulation of double white threads forming for the most part triangular meshes; the central depression is more faintly reticulated than the rest. Five out of six eggs were laid on the stems of the broom twigs.

The newly-hatched larva is dirty-greenish in colour, with the head black, and is covered with hairs, which for its size may fairly be called long. Could I have found flowers of broom, my larvæ would have fed better, and grown faster; failing flowers, they ate young leaf-buds, and by July 9th, I see they had attained not much more than one-twelfth of an inch in length, and were very stumpy in proportion, being then brownish in colour, with a darker brown dorsal line bordered on each side by a row of yellowish streaks. After this the colour changed to green, and the whole appearance agreed as aforesaid with Mr. Buckler's description.—J. HELLINS, Exeter, November 11th, 1870.

Note on breeding Deilephila galii.—At page 72 of his "Lepidopterists' Guide," Dr. Knaggs gives a receipt for forcing pupæ—recommended by the fact, that Mr. Boswell Syme had, by it, succeeded in bringing out "*all—the galii*, which he "has at various times had the good fortune to meet with in the larval state;" now, though Mr. Boswell Syme reckons his *galii* by hundreds, and I reckon mine only by units, yet it may be of use to some of our friends to say that I have just succeeded in rearing, by this method, four moths from four pupæ—all my stock.

I began the forcing process a few days after Christmas, the first moth appeared on January 18th, the second on the 19th, the third on the 22nd, and the fourth on February 9th, all perfect and of fine colour.

After this, I never mean to lose a Sphinx pupa again.—WM. BUCKLER, Emsworth, February 11th, 1871.

Abnormal appearance of Smerinthus populi.—A male specimen of this species rather astonished me by "putting in an appearance" in one of my breeding-cages last month. The pupa from which it emerged was dug in September, and had been kept with several others of the same species in a cold room. What induced this one to come out so many months before his time?—A. E. HUDD, Stapleton Road, Bristol, 10th January, 1871.

Notes on Peronea comariana, proteana, and potentillana.—That *proteana* and *comariana* are only two different forms of one species seems well established by my own experience in breeding them. On the 29th of May, 1869, I collected a considerable number of larvæ on *Comarum palustre*. These I carefully separated, and kept the two forms apart, yet from each of these separate batches I bred both *comariana* and *proteana*.

Two principal forms of the larva may be thus distinguished—*a*, with the head very pale yellowish-brown, gelatinously transparent and spotted with brown, the body whitish-green or greyish-green, with the legs, anal plate and thoracic plate of the same colour, the latter margined with black posteriorly; and *b*, with the head and thoracic plate shining black, the body dirty whitish, with scarcely a tinge of greenish, the dorsal line broad, darker grey.

I also separated some intermediate forms: one almost like *a*, but the body of a fainter, whitish-yellow colour; another resembling *a*, but whitish-green, with faint grey dorsal line, and two sub-dorsal lines, and with the head spotted above with very pale yellowish-brown. I had expected to breed *comariana* from *a* and *proteana* from *b*, but I reared both forms from each, and also some intermediate varieties.

Of the intermediate forms of the larvæ, the first-mentioned produced a brownish-yellow *proteana* (resembling *comparana*), with black costal spot, the other produced a typical pale yellow *comariana*, entirely without any trace of a costal spot.

Madam Lienig looked upon *proteana* (which at that time was not described) as a small *comparana*, and it can only be in reference to this *comparana* that her conjecture arose that *comariana* might be a variety of that species. Lately I received also from Professor Zeller *proteana* with the label—*comarianæ*, var.

I have taken *comariana* at Magnusholm between the middle of July and the middle of September. Baron Von Huene took it at Lechts and Tois from the 13th of August onwards, and then again on the 1st of April, hence evidently hibernating.

My bred specimens all appeared in the latter half of June, after a very short pupation, so that it is most probably double-brooded.

In Wilkinson's British Tortrices (a work which only came into my hands after I had completed my Fauna) there is mentioned after *comparana*, at p. 167, a *potentillana*, which, according to the characters there assigned to it, can hardly be anything else than *comariana*, Z., although the food-plant of the larva there indicated is not *Comarum palustre*, but strawberry.—J. H. W. Baron NOLCKEN (translated from his "Lepidopterologische Fauna von Estland, Livland und Kurland").

Captures of Lepidoptera in Carmarthenshire.—The following moths are among the best of my captures during last season. With the exception of four or five, all were taken in my own garden.

S. ocellatus, common; *populi*, scarce; *A. Atropos*, very common; *S. ligustri*, common; *D. livornica*, one specimen given me at the end of May, and I saw another hovering at some flowers a few days after; *C. porcellus*, one larva; *C. Elpenor*, common; *M. stellatarum*, very abundant; *Hepialus sylvinus*, scarce; *M. miniata*, common; *H. dominula*, common; *D. mendica*, very common, I took a female as early as April 20th; *E. dolobraria*, scarce; *E. tiliaria*, scarce; *H. abrup-*

taria, common; *G. obscurata*, common; *T. amataria*, scarce; *L. virescens*, one specimen; *A. badiata*, common; *derivata*, common; *N. dromedarius*, one at light; *T. batis*, common; *derasa*, very abundant; *B. glandifera*, very common; *A. ligustri*; *Leucania comma*, common; *L. putrescens*, two specimens at sugar; *H. popularis*, common at light; *C. Cytherea*, common; *M. albicollis*, common; *R. tenebrosa*, common; *Agrotis palligera*, common; *puta*, abundant; *suffusa*, common; *saucia*, very abundant; *lunigera*, common; *lucerna*, scarce; *præcox*, one at sugar; *T. fimbria*, common; *N. neglecta*, very abundant; *T. rubricosa*, common; *munda*, scarce; *C. xerampelina*, I took one specimen at sugar on the 4th September, 1869; *Epunda nigra*, very common; *lichenæa*, very common; *lululenta*, scarce; *H. adusta*, common; *H. suasa*, common; *C. exoleta*, common; *vetusta*, rare; *Heliothis marginata*, rare; *X. rhizolita*, not common; *semibrunnea*, common; *P. festuca*, one specimen; *iota*, common; *P. ænea*, scarce; *Diasemia literalis*, one specimen at light.—E. KAYE, Langharne, Carmarthenshire, December, 1870.

Captures of Lepidoptera near Huddersfield, &c.—The following is a list of some of the Lepidopterous insects I have come across in this neighbourhood during the season of 1870. Where the date is given, it refers to the first day on which the species was noticed:—*Colias Edusa*, a male specimen was taken at Shepley by a man named William Bennett, who gave it, unset, to me; I believe it is eleven years since a specimen was taken here previously. *Macroglossa stellatarum*. *Sesia philanthiformis*, 8th July, bred from pupæ sent to me from Scotland by Dr. White. *Amphydasis betularia*, unusually common and distributed. *Cubera exanthemaria*, Prince Wood, not a very common species here. *Scodiona belgiana*, 23rd April, larvæ common on ling; 4th June, imago at rest on bare parts of the moor; the males are very conspicuous, females approach nearer to the colour of the ground; Crosland and Greetland heaths. *Larentia multistrigaria*, 2nd April, Black Fir wood and Grimescar. *Emmelesia decolorata*, larvæ in seed-capsules of *Lychnis*. *Eupithecia valerianata*, 7th June, bred from pupæ sent to me from Derby. *E. fraxinata*, 30th July, larvæ not uncommon on ash at Birkby and Grimescar. *E. subnotata*, 24th June, very plentiful, Clare Hill and Birkby. *E. absynthiata*, 29th June, bred from larvæ sent to me by Mr. G. B. Longstaff. *Lobophora hexapterata*, bred from larvæ sent to me from Scarborough. *Melanippe galiata*, 28th June, very abundant at Grimescar, where *Galium saxatile* grows; the females deposited their eggs freely if a small sprig of this plant were placed in each chip box. *Scotosia dubitata*, 5th September, not uncommon, Clare Hill and Whitley Lower. *Cidaria miata*, 18th August, bred from pupæ sent to me from Richmond; I entirely failed in my endeavours to keep the females alive to obtain eggs. *C. prunata*, 26th July, Clare Hill. *C. populata*, common amongst *Vaccinium myrtillus* at Linthwaite. *Tanagra chlorophyllata*, plentiful in hay fields. *Cilia spinula*, 6th June. *Pygæa bucephala*, common and distributed; this species, though usually considered universally common, I have found to be by no means so here, until this season, when it occurred in gardens even close to the town. *Nonagria lutosæ*, 4th October, Clare Hill. *Hydræcia nictitans*, 2nd August, common at sugar, Clare Hill and Prince Wood. *Chæræa graminis*, 3rd August, near Clare Hill. *Apamea ocellæ*, 6th May, larvæ in stems of *Dactylis glomerata* (cocks' foot grass). *Miana fasciuncula*, very abundant at sugar. *M. literosa*, 22nd July, at sugar. *M. arcuosa*,

plentiful at Grimescar. *Triphena ianthea*, in the larva state in spring. *Polia flavocincta*, larvæ not uncommon in the garden in June on "everlasting pea;" imago in September, at sugar and at rest. *Dasyptilia Templi*, 1st April, a specimen at rest on an elm twig beside a gas lamp at Birkby; in the autumn a man worked two days for me, turning over stones, but only found two specimens, Shepley. *Heliothis marginata*, 8th June, bred a good series from larvæ sent to me from Scarborough, and which I fed on *Polygonum persicaria*. *Mania maura*, 12th August, Claro Hill. *Ebulea sambucalis*, an elder tree in the garden had the lower part entirely stripped of its leaves with the great abundance of the larvæ of this insect.—GEO. T. PORRITT, Huddersfield, December 23rd, 1870.

Captures of Lepidoptera near Norwich.—On the 14th July last, I walked over to a place some little distance the other side of Norwich, in which *Oxyptilus teucii* occurred in some numbers last year. Here I again found the pretty little plume, among *Teucrium scorodonia*, and flying over it in plenty towards evening, and was also highly pleased to find *Sophrionia parenthesesella* flying rather commonly after sunset over very short and stunted heath: its habit was to start up at one's feet and dart rapidly away with a zigzag flight, settling again at a short distance, and specimens continued to turn up in this way until it was too dark to catch them.

Earlier in the afternoon I had obtained, by beating a neighbouring strip of fir trees, several specimens of *Batrachedra pinicolella*, as well as *Thera firmaria*, *Sericoris bifasciana* and *Stigmomota confertana*.—CHAS. G. BARRETT, Norwich, 13th October, 1870.

Teichobia Verhuellevella feeding on Asplenium trichomanes.—Early last spring my father, spending a few days at Ashburton, in Devon, and finding some of the small ferns very plentiful there, sent me a lot of plants, to console me, I suppose, for living in a neighbourhood in which even *Polypodium* is hardly common, and *filix-mas* is quite an object of interest. These were doing very well under glass, when one day in April I noticed that some of the pinnæ of a plant of *Asplenium trichomanes* were gnawed by an insect, and a very little examination enabled me to find two larvæ, easily recognizable as those of *Teichobia Verhuellevella* at work underneath them. Their mode of feeding was to devour the whole of the substance of each pinna, except its upper cuticle—which was left partially transparent—and the fructification, which was carefully added to the case under which each larva fed, consequently the case increased in size as the larva grew. This case lies flat upon, or rather under, the pinna upon which the larva is feeding and never appears to be raised on its end like those of the allied species, otherwise it rather resembles in texture and roughness, though not in shape or position, the loose outer case of *Diplodoma marginipunctella*. The larva carries it from place to place as it feeds, and ultimately assumes the pupa state in it. One of mine attached it to the upper-side of a frond and the other laid it across the under-side of the rachis and two pinnæ. This was at the end of May, and the moths appeared on June 8th and 9th.

This seems to be a deviation from the usual habit of the larva of this species, which is described as "burrowing under the fructification of *Asplenium ruta-muraria* and *Scolopendrium vulgare*." The locality too is worth noting as the insect is most likely common there.—ID.

Note on Latrodectus malmignatus, Walck.—Last August, I took a ♀ of this fine spider, among the ruins of a Genoese fort on the Bay of Ajaccio. Two egg-bags occurred in the same situation, one belonging to the above ♀. The young are now hatching, and may be perhaps 150 in number. Can any gentleman skilled in *Arachnida* suggest a method of rearing them? The adult spider has the abdomen as large as a grape, black, with vermillion spots (see *Suites à Buffon, Aptères*, t. i. 642, Atlas, pl. xiv, fig. 4 D).—T. A. MARSHALL, Barnstaple.

Reviews.

“SYNOPSIS COLEOPTERORUM EUROPE ET CONFINIUM ANNO 1868 DESCRIPTORUM,” by G. R. Crotch, M.A.—Williams and Norgate, London, 1871. In this useful pamphlet of 68 pages, the author, following up De Marscul’s idea, has briefly noticed all such species of European *Coleoptera* described during 1868 as have come under his observation; and from his intercourse with continental Entomologists, and knowledge of the current literature of the science, no one could be more competent than he to perform such a task. From his preface, it would appear that the work is likely to be continued; the fasciculus for 1869 being promised shortly, and that for 1870 in April next.

It is entirely in latin (with the exception of a few accidental English words at pp. 67 and 68), and consists of reproductions or abbreviations of the diagnoses of the species described, with very brief differential characters. It also contains rectifications of nomenclature, &c., noticed during 1868, and tabulated lists of *all* species, with localities (but with no characters for *new* species), comprised in such monographs as those of Tournier, Seidlitz, Capiomont, &c., thus departing slightly from the main scheme. The work is so certain to be of great and universal use to Coleopterists (especially if published for the future as rapidly as the preface indicates), that we venture to suggest the addition of the absolute and precise date of publication to the reference of each species: such an addition would much increase its value, especially to those who have no access to the works quoted; and although the dates may, in the majority of cases, be readily enough found by those who possess such works, still it often happens that extrinsic evidence is required before the exact date of publication can be certified,—and such evidence, if not obtainable by Mr. Crotch, is little likely to be in the power of any one else, in this country at least.

The particular clearness and excellence of the type employed (and, presumably, the great saving of cost) must be set off against the somewhat numerous typographical and other errors in this fasciculus; which, printed at Jena, necessarily cannot have been so much under the author’s eye as is usually the case in this country.

“A CATALOGUE OF THE INSECTS OF NORTHUMBERLAND AND DURHAM (REVISION OF COLEOPTERA,” by Thomas John Bold, Newcastle-on-Tyne, 1871 (from the Nat. Hist. Trans. of Northumb. and Durham, vol. iv). Mr. Bold—upon whom alone the task has fallen, through the temporary attraction to other branches of scientific observation of his well-known former colleague, Mr. Hardy,—has done well in collecting from the Trans. of the Tyneside Nat. Field Club, and Nat. Hist. Trans. of

North. and Durh., his numerous notes of addition and correction affecting the original Catalogue of Northumbrian *Coleoptera*. The result of his labours appears to be the addition of upwards of 400 species to the local list, raising it to 1527 species, as compared with the 1172 sp. of the original Catalogue, of which, however, many were erroneously enumerated. At p. 109, Mr. Bold describes a new species of *Scymnus*, under the name *lividus*, and compared with small pale *discoideus*, from which it would appear to differ in being more oval and much more finely and evenly punctured. An indication of a possibly new species of *Gyrophæna* and a record of *Alcochara villosa*, Mann. (?),—a species new to the British list, are given at p. 114. It is much to be regretted that the result of Mr. Bold's conscientious labour should be disfigured by an inordinate number of printer's errors.

PROCEEDINGS OF THE HAGGERSTON ENTOMOLOGICAL SOCIETY.—Mr. Eedle, Vice-President, in the Chair.

1870. October 6th.—Mr. Elisha exhibited some very large specimens of *Epunda lichenea*. Mr. W. Harper exhibited preserved specimens of the larvæ of *Deilephila galii*. Mr. Pryer exhibited *Leucania albipuncta*. Mr. Eedle exhibited two specimens of the rare *Pachetra leucophava*. Mr. Boden exhibited fine specimens of *Heliothis marginata*.

October 13th.—Mr. J. Russell exhibited specimens of *Cymatophora ocularis*, *Mamestra abjecta*, *Agrotis cinerea*, *Catocala sponsa*, and *C. promissa*. Mr. Eedle brought for exhibition a captured specimen of *Deilephila galii*. Mr. Franklin exhibited *Epunda lutulenta*. Mr. Moore exhibited a beautiful specimen of *Xylina Zinckenii*, captured by him in Darenth Wood, on the 2nd of the month.

October 20th.—Mr. E. Barlow, President, in the Chair. Mr. Lormier exhibited preserved larvæ of *Smerinthus ocellatus*, *S. tilie*, *S. populi*, and *Dicranura vinula*. Mr. Healy exhibited some living larvæ of *Coleophora therinella*.

October 27th.—Mr. T. Eedle exhibited specimens of *Ennomos crosaria* and *Halias quercana*. Mr. J. Moore exhibited *Lythria purpuraria*. Mr. Jackson exhibited an example of *Vanessa Atalanta* having a larval head. Mr. J. Russell exhibited fine specimens of *Emmelesia teniata*.

97 members attended the meetings last month.

November 3rd.—Donations to the cabinet.—Mr. J. A. Clark exhibited specimens of *Cossus ligniperda*, *Catocala nupta*, *Zygæna filipendulæ*, *Erebina Blandina*, *Macroglossa stellatarum*, and *Arctia lubricipeda*. Messrs. Barry and Bartlett exhibited specimens of *Phlogophora empyrea*. Mr. Eedle exhibited fine specimens of *Argyrolepis cneana*.

November 10th.—Mr. Scott, who was present as a visitor, exhibited a remarkable variety of *Argynnis Paphia* ♀.

November 17th and 18th.—The Society's annual exhibition took place on the evenings of these dates, and proved a great success.

November 24th.—Donation to the funds.—Mr. T. Cooke, of 513, New Oxford Street, having presented the funds of the Society with one guinea, an unanimous vote of thanks was passed to that gentleman for his kindness. Mr. J. A. Davis exhibited specimens of *Ptilophora plumigera* and *Notodonta dodonæa*.

During this month 77 members attended the meetings of the Society.

December 1st.—Mr. J. Peed, Mr. Scott, and Mr. E. Fitch, were elected members. Mr. Davis exhibited *Odontia dentalis*. Mr. Boden exhibited specimens of *Enpithecia consignata* and *Xanthia aurago*. *Half-Yearly Meeting*.—Messrs. Barlow, Harper, and Gates, were elected to fill the respective offices of President, Treasurer, and Secretary; Vice-President, Mr. Bush; Assistant Secretary, Mr. Burry; Librarian, Mr. Healy; Curator, Mr. Davis. *Committee of Management*.—Messrs. Bramley, Bryant, Bartlett, Eedle, Healy, and Woodage.

December 8th.—Mr. Meek exhibited specimens of *Lemiodes pulveralis* and *Argyrolepis aneana*. Mr. Barlow exhibited living larvæ of *Zenzera æsculi*.

December 23rd.—Mr. Danby was elected a member. Mr. J. A. Clark exhibited a specimen of *Catocala fraxini*. Mr. Meek exhibited *Acronycta alni* and *Madopa salicalis*. Mr. Eedle exhibited a variety of *Pieris rapæ*, having the apical spots much larger than usual, also the veins of the under-wings black.

90 members attended the meetings this month.

1871. January 5th.—Mr. E. Barlow exhibited specimens of *Selenia illustraria* and *Pericallia syringaria*.

January 12th.—Mr. Elisha exhibited specimens of *Phoropteryx ramana*, *Stigmonota lunulana*, and *Catoptria pupillana*.

January 26th.—Donation to the cabinet. Six specimens of *Sesia philanthiformis* by Mr. Warrington. Mr. Boden exhibited specimens of *Cirredia xerampelina*, *Acronycta auricoma*, *Acosmetia caliginosa*, and *D. rubiginea*. Mr. Healy exhibited a box showing the economy of *Euura galle*, Newman, a species of saw-fly bred by him from larvæ forming galls on the leaves of *Vaccinium vitis-idaea*, discovered by Mr. Eedle in Scotland (Perthshire), in the month of June, 1869, the imago being produced the following May.

83 members attended the Society's meetings this month.

NEWCASTLE-ON-TYNE ENTOMOLOGICAL SOCIETY.—The first Exhibition of this Society was held on the 17th inst., in the Curators' Room of the Natural History Society's Museum, which has been kindly lent to the Society to hold its Meetings in.

Amongst the exhibitors—Messrs. Hedworth, Crossling, and W. M. Hamilton showed cases representing the British butterflies; Messrs. D. P. Morrison and F. Barkas showed several cabinet drawers of butterflies and moths; Messrs. Hedworth, Richardson, and Bulman showed several cases of butterflies and moths; Messrs. Johnston and J. Hamilton showed two cases of large silk moths, many of which had been reared by themselves; Mr. Maling showed a case containing Swiss butterflies and moths; Mr. Johnston showed a case of continental types of rare and reputed British *Lepidoptera*, also several fine varieties of *A. betularia* and *A. caja*; Messrs. Johnston and Henderson showed cases of *Coleoptera* and *Diptera*; Mr. C. Eales showed a very fine case of *Tineina*, amongst which were several new species discovered by him during the past year.

This is the first Exhibition the Society has held, and it was quite a success, being largely patronized by visitors, although the meeting had not been publicly announced.

During the course of the evening, the Rev. W. L. Kay delivered a very interesting address.

ENTOMOLOGICAL SOCIETY OF LONDON, 23rd January, 1871, ANNIVERSARY MEETING. A. R. Wallace, Esq., F.Z.S., President, in the Chair.

The following gentlemen were elected Members of the Council for 1871:—Messrs. Butler, Dunning, Fry, Grut, Higgins, McLachlan, Parry, Pascoe, E. Saunders, Stainton, S. Stevens, A. R. Wallace, and Westwood.

Mr. A. R. Wallace was re-elected as President, Mr. S. Stevens as Treasurer, Mr. McLachlan, with Mr. F. Grut, as Secretaries, and Mr. E. W. Janson as Librarian.

The President read an address, for which, and for his services during the past year, Mr. McLachlan proposed, and Mr. Stainton seconded, a cordial vote of thanks: Mr. Wallace replied. Mr. Pascoe proposed, and Major Parry seconded, a vote of thanks to the other officers, coupled with the name of Mr. Dunning, the retiring Secretary, who returned thanks.

6th February, 1871.—A. R. Wallace, Esq., President, in the Chair.

Pastor Kawall, of Pussen, Kurland, was elected a Corresponding Member.

Mr. Bond exhibited several *Lepidoptera*, taken by Mr. Eedle last season in Perthshire, viz.: *Pachnobia alpina*, the third British example; a dark variety of *Thera juniperata*, the ordinary form in that district, and appearing two months earlier than in the South of England; *Gelechia boreella*; and a piece of web formed by the gregarious larvæ of *Hyponomeuta evonymella* (pauli, Z.), over a yard long. Also a specimen of *Vanessa Atalanta*, bred by a metropolitan collector, which still bore the larval head. Professor Westwood said he could remember only four recorded instances of similar monstrosities, viz.: *Nymphalis populi*, *Gastropacha quercifolia*, *Dytiscus marginalis*, and a *Syrphus*.

Mr. Bond laid before the meeting beautifully executed photographs of the eggs of bird-parasites, from slides prepared by Mr. Norman.

Mr. Müller exhibited several oak-galls from Morocco, collected by Mr. Trevor Blackmore.

The Rev. H. S. Gorham exhibited *Oxytelus fulvipes*, Er., from Needwood, new to Britain.

Prof. Westwood exhibited drawings of a singular *Coccus* from the under-side of the leaves of a Siamese *Cypripedium*. The male scales were remarkable for the presence of six raised lines, continued as spine-like processes beyond the shield.

Mr. Stainton remarked that a *Coccus* on Palermo lemons had lately come under his notice, distinct from the ordinary *Coccus* of the orange, and which had the peculiarity of causing the space immediately around the scale to remain green, when the other portion of the rind had acquired the characteristic lemon-colour.

Professor Westwood further exhibited a minute *Corixa* (*C. ovivora*, Westwood) which was destructive to the ova of fresh-water fishes in India.

Mr. Butler read "Descriptions of a new genus and six new species of *Pierinae*."

ON CERTAIN BRITISH HEMIPTERA-HOMOPTERA.

(Revision of, and additions to, the *Aphrophoridae* and *Ulopidae*).

BY JOHN SCOTT.

(Continued from page 196).

Some few families of the *Homoptera* are but poorly represented in this country; so poorly indeed, that it is not uncommon to find a family represented by a single genus, and that genus by but one species; whilst the chances of increasing their numbers are, in most instances, hopeless. As examples, take the *Issidae* and the *Cercopidae*: the former only boasts of the well-known *Issus coleoptratus*, Fab., and the latter of the equally well-known *Cercopis vulnerata*, Illig. (*sanguinolenta*, Panz., *nec* Lin.). Both of these insects appear to belong exclusively to the south, as I have hitherto not seen either of them, nor am I aware of their having occurred, in Scotland or the northern or midland counties of England. Of Ireland, as usual, I can say nothing; nor will much be learned until she has a Birchall in Bugs, as she has in Butterflies. Why *vulnerata* has not been noticed in Scotland seems strange to me, as its wide distribution certainly leads to the conclusion that it ought to be found there. Of the *Tettigometridae*, we did not possess a single species until the year 1866, when the sharp eye of the Rev. T. A. Marshall led him to detect one amongst his captures in Pembrokeshire. The same species had also been taken in the Isle of Wight by Mr. J. C. Dale, and was subsequently recognized by Mr. Douglas amongst that gentleman's stores. I refer to the *Tettigometra impressopunctata*, L. Duf., a species unknown to Fieber, who in the *Verhandl. d. k. k. zool. bot. Gesell.*, 567, 14 (1865), describes it under the name *frontalis*. The insects of this genus are very similar in appearance to *Acocephalus*, and perhaps still more resemble *Ptyelus*; but the shape of the anterior margin of the pronotum and the hinder tibiae (without spines) will lead any one at a glance to discover whether they are mixed up in collections with either of these genera. On the continent, some 30 species are known, and it is just within the range of probability that we may add *T. atra*, Hagenbach (taken by Flor), *T. lata*, H. Sch., and *obliqua*, Panz. (said by Fieber to occur in Germany); the others are all from places too far south to permit us to hope of their being correctly enumerated as British.

The above, I believe, are all the families interposing between the *Cixiidae*, which I have already dealt with, and the *Aphrophoridae*; and I have not thought it necessary in this paper to do more than point to them in passing, as they have been already sufficiently described in this country.

Section.—CERCOPINA.

Family APHROPHORIDÆ.

Aphrophorida, Stål, Hem. Afr., iv, 66 (1866).

Head: crown almost horizontal and somewhat flattened; anterior margin sometimes rounded, generally obtusely angulated; *clypeus* of variable length, reaching to or beyond the 1st pair of coxæ. *Rostrum* 2- or 3-jointed. *Ocelli* 2, or sometimes wanting; when present, placed near the posterior margin of the crown, and more or less remote from the eyes.

Thorax: *pronotum* trapezoidal or hexagonal, anterior margin rounded or obtusely angulated, posterior margin frequently deeply angulate-emarginate; *scutellum* triangular. *Elytra* coriaceous; *clypeus* acuminate. *Wings*: the inferior nerve furcate from the base or before the middle. *Legs*: *posterior tibiæ* armed with one or two spines.

I.—*Ocelli* almost equidistant from each other and the eyes.

A.—*Clypeus* reaching to the apex of the 1st pair of coxæ.

Genus 1.—*PTYELUS*.

„ 2.—*LEPYRONIA*.

II.—*Ocelli* half again as far from the eyes as from each other.

B.—*Clypeus* extending beyond the 1st pair of coxæ.

Genus 3.—*APHROPHORA*.

Genus 1.—*PTYELUS*, Lep. et Serv.

Head short, including the eyes about as wide as the pronotum: crown depressed, with a distinct plate in front as wide as the ocelli, and having a somewhat curved, transverse channel at its base, anterior margin more or less obtusely rounded. *Face* convex, somewhat sulcate transversely. *Clypeus* reaching to the 1st pair of coxæ. *Rostrum* with two joints of equal length, reaching to the 2nd pair of coxæ. *Antennæ* placed in a deep recess immediately underneath the crown and adjoining each eye, the somewhat conical basal joint of the bristle visible from above. *Ocelli*, between themselves and the eyes, equidistant.

Thorax: *pronotum* hexagonal, anterior margin obtusely angulate, lateral margins very short, posterior margin deeply angulate-emarginate. *Scutellum* flattish, longer than broad. *Elytra* longer than the abdomen, narrowed posteriorly, apex rounded. *Legs*: *posterior tibiæ* with two large spines exteriorly, apex with a 'vandyked' fringe; *tarsi*, 3rd pair, 1st and 2nd joints with a vandyked fringe at the apex.

I.—Crown short, along the posterior margin almost four times wider than the breadth across the centre.

Ferruginous-brown. Elytra: corium with two large, somewhat triangular, white patches, next the anterior margin, placed one near and one beyond the middle; at the apex of the clavus, a short, transverse, white streak.

var. 1. White, or greenish-white; scutellum, except the apex, black. Elytra: corium, the anterior margin before the middle with a somewhat square dark brown patch, and a broad, oblique, dark brown band, extending from beyond the middle to the apex of the clypeus.

var. 2. Dark brown. Elytra: corium, anterior longitudinal half, white, or yellowish-white.

var. 3. Black. Head, and anterior half of the pronotum, yellowish-white. Elytra: corium with a faint yellowish spot towards the apex of the anterior margin.....1. *spumarius*,* L.

Pale cinnamon-brown, or fawn colour. Elytra: corium with two large white patches of irregular shape next the anterior margin, placed one before and one beyond the middle....

2. *campestris*, Fall.

Yellowish-brown to dark brown, with a faint bronzy hue. Elytra: corium with a white streak along the anterior margin, extending from the base to past the middle, beyond which is a large white patch.3. *exclamationis*, Thunb.

II.—Crown somewhat elongate; along the posterior margin scarcely three times wider than the breadth across the centre.

Pale yellow. Elytra: corium with a black streak along the 1st nerve; remaining nerves pale brown4. *lineatus*, L.

The members of this genus appear strictly to be attached to grasses and other low plants, and never to occur upon trees or shrubs, except by accident.

P. spumarius is certainly the commonest of all our species of *Homoptera*, and is met with throughout the whole summer everywhere and by everybody.

P. exclamationis is the smallest of the four species; and, although not common, it is widely distributed. Leicestershire (Marshall); Glanville's Wootton (Dale); Micklehams, Sanderstead Downs, Richmond Park, Seaford Downs, &c. (Douglas and self). Time of appearance, July and August. Length, $1\frac{1}{2}$ lines.

* There are other varieties, but the above examples are sufficient here.

P. lineatus. Of the size of *spumarius*, and similarly haired, but by no means such a common species. It rarely varies from the characters given above, the length of the crown alone being sufficient to separate it from the last named. In the London district it has occurred at Weybridge and Beckenham, in July and August. Length, $2\frac{1}{2}$ lines.

The above have all previously been recognised as British; but, as *campestris* is now for the first time brought forward, I give a description in detail.

I.

Genus 1.—PTYELUS, Lep. et Serv.

Species 2.—PTYELUS CAMPESTRIS.

Cercopis campestris, Fall., Hem. Suec., Cicad., ii, 20, 7 (1826);
Zett., F. Lap., 516, 3, ♂ ♀ (1828); Ins.
Lap., 287, 4 (1840).

Ptyela campestris, H. Sch., Nom. Ent., i, 67 (1835).

Ptyelus campestris, Flor., Rhyn. Liv., ii, 125, 3 (1861).

Crown short; along the posterior margin almost four times wider than the breadth across the centre.

♂ ♀. Pale cinnamon-brown or fawn colour, clothed with very short, depressed, pale yellow hairs.

Head: crown, on the sides very finely wrinkled; front plate delicately punctured and with a fine central keel; its margins, and the transverse channel at its base, very narrowly black. *Face* convex, pale brownish-yellow, with a faint central longitudinal channel, on each side of which are 9 or 10 fine, transverse, whitish streaks. *Antennæ* pale brownish-yellow.

Thorax: pronotum finely punctured, with two channels down the middle placed near to each other, and leaving a very narrow and somewhat depressed middle keel between them; on each side, near the anterior margin, two or three deep foveæ. *Scutellum* flat, slightly reddish or brownish-yellow. *Elytra* pale cinnamon-brown or fawn colour, sometimes dark brown: *clavus* very finely punctured, apex generally with a short, fine, black streak: *corium* very finely punctured; next the anterior margin are two large white patches, one before the middle extending inwardly as far as the 1st nerve, the other beyond the bifurcation of the 1st nerve, and extending to its inner branch, its exterior margin generally bilobed; the space between the two patches and the exterior margin of the second patch, for a short distance, generally darker than the other portion of the corium; next the apex of the clavus a short white streak, followed by a similar black one. *Sternum*: mesosternum, in the middle, black. *Legs* yellow or brownish-yellow. *Tibiæ*, spines and fringe at the apex of the 3rd pair, black; *tarsi*, 3rd joint, and claws of all the pairs and fringes of the 3rd joint, tipped with black.

Abdomen above, in the middle, black, sides broadly yellowish or reddish, or brownish-yellow; underneath, similar to the upper-side; *genital segment* yellow.

Length, $1\frac{1}{2}$ lines.

[To be continued.]

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 2).

BY H. W. BATES, F. Z. S.

TEFFLUS HAMILTONII, n. sp.—*T. Megerlei* dimidio minor, niger, antennæ brevibus thoracis basin paulo superantibus; thorace lato, pone medium rotundato-dilatato nequaquam angulato, lateribus pone dilatationem haud sinuatis, supra plano, grosse conflunter punctato, marginibus haud reflexis; elytris sub-oblongo-ovalibus, apice abrupte declivibus, obtuse rotundatis, supra costis alternatim paulo angustioribus; corpore subtus lævi.

Long. 1 in. 4 lin. Lat. thoracis 4 lin. 2 exempl. ♀.

Distinguished from all other known species by the broadly rounded sides of the thorax, the short antennæ, and the somewhat oblong-oval form of the elytra. The width of the thorax is exactly 4 lines, whilst its length in the middle is only $3\frac{1}{3}$ lines; and its sculpture differs from other species in consisting of very large rounded punctures, confluent chiefly in a longitudinal direction, and leaving elongated, irregular, smooth interstices. The elytra are much fuller at the shoulders than in any other species, and their extreme apex is not flattened out as in *T. Megerlei*; the alternately narrower costæ reach very nearly to the base, and the sculpture of the interstices consists in very regular transverse carinæ, only slightly tuberculated in the middle. In size this species does not differ from *T. carinatus*, Klug, so beautifully figured (under the synonym of *T. Thomsonii*) in the French 'Annales,' 1856, t. 8, f. 2, but the sides of the thorax in that species form very distinct angles, and the elytra are narrowed off at the shoulders. In the form and sculpture of the elytra *T. Hamiltonii* very much resembles *T. violaceus*, Klug, which differs in its elongate thorax, in colour, and in the punctured episterna of the prothorax.

This interesting new species was discovered by Charles Hamilton, Esq., author of the "Sketches of Life and Sport in South-Eastern Africa," on his recent journey in Angola. About 10 specimens were found, all agreeing in their specific characters. I am indebted for the pair in my collection to this adventurous traveller, and to his friend F. G. H. Price, Esq. A male in Mr. Janson's collection differs only in the thorax being slightly narrower, and the elytra less full at the shoulders.

Genus PERICOMPSUS, *Leconte*.

Schaum, in his volume of the "Insecten Deutschlands," and in the "Berliner Entom. Zeitschrift," 1860, p. 201, admits *Pericompsus* as a very natural group of *Tachys*, distinguished by its convex elongate-oval of body, six elytral striæ, besides the marginal one, which is deep

and removed from the margin, and by its light, clear colours. The group, in fact, embraces a number of New World species, easily recognizable by the characters here enumerated, but they are not so distinct from *Tachys* as Schaum appeared inclined to admit. In form it is difficult to distinguish them from such species as *Tachys pulchellus*, Laferté, and many others, which possess only one or two deeply impressed sutural striæ; and the character drawn from colouration is invalidated by the discovery of a species agreeing in structure very well with the rest, but having a dark metallic hue. The following species are new:

PERICOMPSUS GROSSEPUNCTATUS, n. sp.—*P. hirsuto* (Schaum) *affinis*, paulo major, sparsissimè *hirsutus*, elytris seriebus punctorum sex grossis æqualibus; rufo-testaceus, elytris pone medium fascia indeterminata rufescentifusca; thorace angusto, postice valde angustato; elytris quarta parte apicali lævissima, antennis pedibusque flavo-testaceis. Long. $1\frac{1}{4}$ lin.

Of the same slender form as *P. hirsutus* of Schaum, but differs in the elytra having only a very few long erect hairs (two of which on each elytron proceed from punctures on the 3rd interstice), instead of the rather dense clothing of that species; and in the inner rows of punctures not being smaller than the rest. These punctures do not lie in distinctly impressed striæ. The apex of the elytra is not blackish, nor is there a black streak connecting the fascia with the base as in *P. hirsutus*.

Rio Janeiro. In my own collection and that of Mr. Grut.

PERICOMPSUS PICTICORNIS, n. sp.—*P. hirsuto* forma simillimus, differt corpore nudo, antennis pallidis art. 4—6 fusco-nigris; elongato-ovatus, rufo-testaceus, antennis pedibusque pallidis, illis art. 4—6 fusco-nigris; thorace postice valde angustato, elytris striis sex punctulatis leviter sed distincte impressis, pone medium fascia fusco-nigra prope suturam interrupta.

Long. $1\frac{1}{3}$ lin.

Distinguished by the pale antennæ having a blackish ring in the middle, including joints 4 to 6. The elytra are broadest in front, and attenuated towards the apex; there are a few long setæ only, arising from punctures, and the striæ are distinctly impressed and finely punctured. The black fascia is distinct only on the disc, becoming reddish near the suture, and the dusky-red colour is sometimes extended posteriorly along the suture towards the apex. The apex of the elytra is smooth and glossy.

Rio Janeiro, apparently common; taken by the late Rev. Hamlet Clark and Mr. Squires. I have examined about a dozen specimens in my own collection and that of Mr. Grut.

PERICOMPSUS SIMPLEX, n. sp.—*P. hirsuto forma similis, differt corpore nudo, thorace antice multo minus rotundato-dilatato, minus convexo. Rufo-testaceus, antennis pedibusque pallidis, immaculatis; elytris elongato-ovatis, striis sex impressis grossius punctatis, interstitiis elevatis, flavo-testaceis, apud medium macula magna communi rufescenti prope latera nigrescenti et antice dilatata, apice lævibus.* Long. $1\frac{1}{3}$ lin.

Similar to *P. picticornis* in form and colour, differing in the immaculate antennæ, and also in the striation of the elytra. In *P. picticornis* the striæ are sharp and fine, though slightly impressed and finely punctulated; in *P. simplex* they are distinctly broader and less impressed, and the punctures considerably larger, without, however, reaching the size they present in *P. grossepunctatus*. The thorax in both species is distinctly less dilated and convex anteriorly than in *P. hirsutus*, but approximates more nearly to this species than to the typical sp. *P. ephippiatus*, Say.

St. Catharine or Rio Grande, S. Brazil; from M. Meyer-Dür's collection.

PERICOMPSUS IMMACULATUS, n. sp.—*Minor, rufo-testaceus, nudus, antennis pedibusque pallidioribus; thorace quàm in P. epiphippiato multo breviori, valde transverso, sub-quadrato, postice modice angustato, basi sulco sub-marginali, angulis rectis; elytris striis quinque punctorum vix impressis, 2—5 antice posticeque abbreviatis.* Long. $\frac{3}{4}$ lin.

Distinguished by its small size, short and broad thorax, and the obliteration of the 5th (or outermost) stria.

Ega, Amazons; 3 examples.

PERICOMPSUS INCISUS, n. sp.—*P. clitellari* (Erichs.) proxime affinis, sed paulo minor, elytris haud nigro-plagiatis. Rufo-testaceus, elytrorum sutura, pectore abdomineque fusco-nigris; thorace transversim quadrato, postice paulo angustato, elytris striis sex acute incisis, vix punctulatis, striis 1—2 ad apicem extensis, 3—4 ante apicem conjunctis, 5 striolam recurvam attingenti, sutura et disco postice infuscat, apice flavo-testaceis; prosterno rufo-testaceo, meso- necnon metasterno abdomineque fusco-nigris. Long. 1 lin.

Differs from *P. clitellaris*, Erichs., by the absence of the clear black patch across the elytra, and by the red under-surface of the pro-thorax. It appears closely allied also to *P. concinnus*, Laferté, of which, however, the elytra are described as dark, with four pale spots.

Santarem, Amazons. In my own collection and that of Mr. Grut.

PERICOMPSUS METALLICUS, n. sp.—*Nigro-æneus, pedibus flavo-testaceis, antennis fuscis, basi et palpis rufo-piceis; thorace transverso-quadrato, postice modice angustato; elytris striis sex grosse punctatis, 2—6 longe ante apicem terminatis.* Long. 1 lin.

The only metallic-coloured species of the genus at present described. In general form, distance of marginal stria from the margin, and number of striæ, it quite accords with the characters given by Schaum for the group, although quite differing in colour.

Rio Janeiro (Squires). In my own collection and that of Mr. Grut.

OBS.—Besides the species above recorded as found in the Amazons region, the following may be enumerated as occurring there. *P. hirsutus*, Schaum; *P. clitellaris*, Erichs.; and *P. jucundus*, Schaum. All are found on the moist margins of pools, especially when half dried up in the hot season, and readily take wing when disturbed. I have taken them flying also in the evening. This habit may help to explain the wide distribution of some of the species.

The list of species of *Pericompsus* in Gemminger and v. Harold's catalogue will have to be modified by the addition, besides the above-described, of *Bembidium circuliforme* (Solier) from Chili, and the withdrawal of *P. punctatellus* of Motschoulsky, which has seven striæ besides the marginal one.

Genus *XYSTOSOMUS*, Schaum.

This genus has not been admitted as distinct from *Tachys* by Gemminger and v. Harold, although it is much more sharply defined than *Pericompsus*, which they have adopted. The character on which it was chiefly founded is the simple apex of the anterior tibiæ, the apex in *Tachys* being externally dilated and obliquely truncate. The species are of very broad, ovate, and sometimes inflated, form. The elytra in the two species known to Schaum are perfectly smooth, in those described below, they are more or less distinctly punctate-striate and much less convex.

Xystosomus inflatus, Schaum, Berl. Ent. Zeits., 1860, p. 202, t. iii, f. 9.

„ *turgidus*, Schaum, *id.* 1863, p. 89, t. iii, f. 8.

XYSTOSOMUS OVATULUS, n. sp.—*X. turgido major*, multo minus convexus; elongato-ovatus, nigro-æneus, fronte bisulcata, thorace transverso, antice rotundato-angustato, angulis posticis rectis, supra convexiusculo, linea abbreviata dorsali profunda, basi utrinque fovea magna et extus carina elevata; elytris latis, regulariter ovalibus, supra lineatim subtilissime punctatis, stria marginali medio interrupta; antennis, palpis, pedibusque testaceo-rufis, femoribus tibiisque medio infuscatis.

Long. $1\frac{3}{4}$ lin.

The colour is brassy-greenish or blueish-black; the minute punc-

tures of the elytra which represent the striæ form seven rows. The basal transverse sulcus of the thorax runs obliquely across the fovea and does not reach the middle.

Rio Janeiro, from the collection of the late Rev. Hamlet Clark.

XYSTOSOMUS STRIGOSUS, n. sp.—*X. ovatulo proxime affinis, differt elytris punctato-striatis, interstitiis convexis; nigro-æneus, leviter iridescens, capite bisulcato, thorace basi utrinque foveato et extus carinato; elytris latis, ovalibus, convexiusculis, striis septem punctatis, quarum 1^{ma} sola apicem attingit, 7^a vix impressa, notatis; antennis pedibusque testaceo-rufis, his fusco maculatis.*

Long. 1 $\frac{3}{4}$ lin.

Rio Janeiro. In my own collection and that of Mr. Grut.

XYSTOSOMUS GRUTII, n. sp.—*X. strigoso similis, multo major. Viridi-æneus, sub-sericeus, iridescens; fronte sulcis duobus elongatis rectis, labro, palpis, antennis, pedibusque fulvo-testaceis, femoribus paulo infuscatis; thorace transverso-quadrato, antice rotundato-attenuato, angulis posticis productis, acutis, basi utrinque fovea magna et extus carinato, sulco abbreviata transversa per foveam ducto; elytris latis, ovalibus, paululum convexis, striis 7 dorsalibus duabusque approximatis marginalibus punctatis, apicem fere attingentibus; margine laterali explanato, interdum rufescenti; corpore subtus rufescenti.*

Long. 2 $\frac{1}{2}$ lin.

Probably the largest known species of the *Tachys* group of *Bembidiinæ*.

Rio Janeiro. In my own collection and that of Mr. Grut.

Kentish Town: March, 1871.

NOTES ON SOME CORSICAN INSECTS.

BY REV. T. A. MARSHALL, M.A., F.L.S.

(Continued from page 228).

Orthoptera. If the number of species of this order be inconsiderable, the multitude of individuals, their size, the strangeness of their forms, and the Babel of sounds which they keep up at all hours throughout the island, cannot fail to excite the curiosity. The marshes of the Campoloro near Ajaccio, and the lonely and pestiferous shores of the lagoon of Biguglia—once a Genoese seaport—are the head quarters of the grasshoppers. In June and July, these places are covered with a jungle of densely tangled grasses and flowers, rising higher than the breast. Every step disturbs hundreds of scared leaping creatures, which display rose-coloured, pale blue, and yellow wings,

barred with black, and resemble flying flowers. Every gradation of stridulous note, from the harsh fiddle-scraping of *Decticus* and *Ephippigera* to the feebler pipes of *Phaneroptera* and *Conocephalus*, combines to swell the not unpleasing discord, and to impress the mind with the idea of incalculable numbers and inexhaustible variety. The most barren spots have also their inhabitants; the species of *Ædipoda* delight in basking on the hot sand of the shores, or on the rocks, and may be turned out from every clump of sea-spurge or *Cineraria*. Many species were still in the larval state at the time of my visit, and hence the following list can scarcely be complete, but I do not think the omissions are many. Beyond a very few notices in Fischer's "Orthoptera Europæa," no special attention seems to have been given to these insects in Corsica. I have followed the nomenclature and arrangement of that very complete work, because I know nothing better.

Labidura gigantea, Fab. Running about the quays of Ajaccio at night; common. *Forficula auricularia*, L. *F. pubescens*, Géné. On trees; Campoloro.

Blatta marginata, Schreb. Under stones, sea shore. *B. germanica*, L. In houses. *B. livida*, Fab. Taken commonly, by sweeping. *Periplaneta orientalis*, L. Several exotic species (introduced), said to be found in Sardinia, I did not meet with.

Mantis Spallanzania, Rossi. Rare. *M. religiosa*, L. Less common than in S. France.

Bacillus gallicus, Charp. One full grown in the Botanic Garden of Ajaccio. Young larvæ occasionally.

Gryllotalpa vulgaris, Latr. Banks of the R. Gravone. It resembles individuals from the banks of the Rhone at Tarascon. Smaller than the British insect, and the fore legs differently toothed. Another species? *Mogoplistes brunneus*, Serv. Under stones, rare; very delicate and difficult to preserve. *Æcanthus pellucens*, Scop. Common near Ajaccio. *Trigonidium cicindeloides*, Serv. Shining black, with red hind femora; a most beautiful little cricket, and peculiar to these islands. Campoloro and Biguglia. *Gryllus campestris*, L. Banks of the Gravone.

Ephippigera rugosicollis, Serv. Campoloro. Stridulates loudly; bites severely; ♂ fawn-coloured, ♀ green. The spp. are distinguished with difficulty. They are best preserved in spirit. *E. vitium*, Serv. Less common than the preceding. *Phaneroptera macropoda*, Burm. *P. falcata*, Scop. *Conocephalus mandibularis*, Charp. *Xiphidium fuscum*, Fab. *Locusta viridissima*, L. *Thyreonotus corsicus*, Serv. *Thamnotrizon Ramburi*, Serv. *Decticus albifrons*, Fab. The largest of the genus, very abundant and striking at the Campoloro. *D. verrucivorus*, L. *D. griseus*, Fab.

Troxalis nasuta, L. Campoloro and Biguglia. Perhaps the most singular of European locusts: I have some from the C. of Good Hope which do not differ. *Pyrgomorpha rosea*, Charp.; like the preceding, but with rose-coloured wings: rare. *Paracinema bisignata*, Charp. On aquatic plants: I found this also in the Landes, near Ychoux. *Stenobothrus pratorum* and *S. variabilis*, Fieb. *Stetheophyma variegata*, Sulz.; common. *Epacromia thalassina*, Fab. *Caloptenus plorans*, Charp. Rare. *C. italicus*, L.; everywhere, in countless myriads. *Porthetis marmorata*? Burm. Only in larval state; grass-green, with a yellow thoracic crest. *Acridium tartaricum*, L. Hills near Ajaccio. It is common at Marseille. *Pachytylus migratorius*, L. On desert shores, Biguglia. Abundant; flies more readily than most spp., and for a greater distance. It alights, however, after a short effort, and appears quite incapable of "warping on the eastern wind" in the manner stated by poets and historians. Has any entomologist ever witnessed a real migratory movement of these locusts? *P. cinerascens*, Fab. *P. nigrofasciatus*, Latr. *Ædipoda insubrica*, Scop. *Æ. cærulans*, L. *Æ. fasciata*, Siebold. The blue or red wings of this genus, generally crossed by a black band, render them very conspicuous. *Tettix subulata*, L. *T. bipunctata*, L. The name *Tettix* (= *Cicada* in Latin) is surely most inappropriate to these insects.

I have many still in bottles of alcohol, and not examined; but the above represent the most numerous and obvious species of Corsica.

[To be continued.]

FURTHER NOTES ON THE ŒCONOMY OF THE *CHRYSIDES* PARASITIC ON *ODYNERUS SPINIPES*.

BY T. ALGERNON CHAPMAN, M.D.

In Vol. vi of this Magazine (p. 153, *et seq.*), I recorded some observations on the *Chrysidæ* parasitic on *Odynerus spinipes*. I was then able to trace nearly the whole life-history of *C. bidentata*, but, with respect to *C. neglecta* and *ignita*, I was obliged to leave the oviposition and the earliest stages of the larva without any elucidation. I again attacked the subject in the summer of 1870; and, though I did not succeed in clearing up the matter, I desire to record the result of my observations so far as they went.

In 1869, I expressed my knowledge or want of knowledge of the early stages of *C. neglecta* by saying that "I have not seen the egg of the latter, and do not know how or where it is laid; but it supplants that of *O. spinipes*, as, a few days after the mother wasp has closed her

cell, stored with green grubs, it contains a young larva of *C. neglecta*, busily eating that store, and no trace remains of the egg or larva of *Odynerus*."

I therefore especially directed my attention last summer to cells in process of construction or recently closed cells, and, having at hand one or two localities where *O. spinipes* was abundant, I examined a considerable number of these. I used to dig in the bank where they were constructing their cells, and, on opening one, turn its contents carefully out, and examine them and the wall of the cell. It not unfrequently happens, that, in opening a cell, the portion of wall removed and usually lost is that to which the egg of *spinipes* is affixed; and this source of error in the following observations must be remembered when it is stated that no trace of *spinipes* was found.

There are two matters in relation to the nidification of *O. spinipes* that may as well be noted, as they enable us to understand the remarkably rapid development of the larva of *O. spinipes*, and especially of *C. neglecta*, and also why the green grubs are preserved so fresh and plump until they are eaten; whereas, when removed from the cell, and kept, say in a pill-box, they speedily die and desiccate.

One of these points is, that, in removing the earth to form her cell, *O. spinipes* wets it freely, so as to soften it and admit of its being scraped into pellets; and, as a result, much of the moisture so applied soaks into the earth, so that each cell is surrounded by a zone of damp earth of a quarter of an inch in thickness. The other point is, that the place of nidification is always a bank freely exposed to the sun, often at such an angle that for part of the day it has a vertical sun, and in such a recess of the bank that the surrounding parts reflect and concentrate the heat upon it. The result is, that the cells must have a very high temperature, with a moist atmosphere that probably intensifies its effects.

I found altogether a considerable number of larvæ of *neglecta* newly hatched, but in only one instance did I meet with an egg; whether this was an egg of *C. neglecta* or of *C. ignita*, I cannot positively say, as the larva when full-fed was not placed in circumstances to make it spin a characteristic cocoon (which it can only do in a cell of similar size and shape to that of the wasp), and it afterwards died. It is, however, extremely probable that it was *C. neglecta*, as that species is so much more abundant than *C. ignita* in the cells of *O. spinipes*. I do not, however, consider the point as of extreme importance, as it seems almost certain that the habits of *C. ignita* and of *C. neglecta*, as parasites of *O. spinipes*, are the same.

This solitary egg was found on June 13th. I will give the observations made on that day, as they derive a special importance from the fact that the two previous days had been so dull that *spinipes* was not at work, nor *neglecta* moving about. I expected in consequence to find cells constructed on days previous to these two dull days containing larvæ of *neglecta* of some size, and cells constructed and stored only that morning; and that in those of the latter that contained *neglecta*, I should find it as an egg. Nor was I disappointed: there was the gap in the ages of the larvæ in the cells of that day and those of previous work; and in one solitary instance, as noted above, I found the egg of *neglecta*. I could find with this egg no trace of the egg of *O. spinipes*, and this makes it just possible that this may have been an egg of *C. ignita*, and that the habit of the latter differs from that of *C. neglecta* in the parent *C. ignita* destroying or removing the egg of *O. spinipes* at the time that she lays her own egg; though my observation of the oviposition of *C. ignita* in 1869 would seem to contradict this, and the inference is, that the egg of *O. spinipes* was lost in opening the cell, as already noted.

It is certainly not the habit of *C. neglecta* to remove or destroy the egg of *O. spinipes*, but I believe that she injures it, probably with her ovipositor at the time of laying her own egg. *C. neglecta* remains in the egg-state but a very brief period; on June 13th, as noted above, I found in each of two cells of that day's construction a newly-hatched larva of *C. neglecta*, which could not have been lain as an egg more than an hour or two, if so long. The following notes of the state of the cells containing newly-hatched *C. neglecta* larvæ are my data for assuming that the egg of *O. spinipes* is injured by the oviposition of *C. neglecta*, and that it is not attacked by the larva of *C. neglecta*. In one of those found on June 13th, the *C. neglecta* was separated from the egg of *spinipes* by a green grub. The contents of its intestine were dark coloured, being derived from a green grub, not yellowish as they would be if from the egg of *spinipes*; but the egg of *spinipes* was wrinkled and shrunk to about half its proper size, the amount of growth of the *neglecta* being, however, not nearly so much as the loss sustained by the egg of *spinipes*. In the other instance met with on June 13th, the egg of *spinipes* was not detected. On June 15th, I found a cell containing a larva of *C. neglecta* already sufficiently grown to be in process of casting its first skin.

In this cell was the empty egg-shell of *spinipes*, and the young larva of *spinipes* dead and shrivelled to about half the size of its egg, injured, and glued in drying to a green grub, but apparently not

eaten or sucked out at all ; the intestinal contents of the *C. neglecta* were greyish-green. In this instance, the cell must have remained open for a day or two until the *spinipes* larva was hatched, not an unfrequent circumstance, probably because the weather prevented the mother wasp from completing her tale of green grubs, and the cell must have been visited by the *C. neglecta* to lay her egg after the hatching of the *O. spinipes*, after which the cell was completed and closed by the wasp. On June 9th, I found with the larva of *C. neglecta* an egg-shell of *spinipes*, and a dried and empty skin of *spinipes* larva which suggested to me at the time, that the larva of *spinipes* had been sucked out by that of *neglecta*,—a conclusion which further observation has led me to reject. On the same day, I found an injured egg of *spinipes* with a young larva of *neglecta*.

I find, therefore, that the young larva of *neglecta* occurs beside the injured egg of *O. spinipes* ; but that the amount of growth of the larva of *neglecta* is not sufficient to explain the loss of bulk of the *spinipes* egg or larva ; that its intestinal contents are derived from the green grub and not from *spinipes* ; and that the remains of *spinipes*, when found, although injured and more or less dried and shrivelled, appear not to have had the fluid sucked out ; and I conclude that the injury to the egg or larva of *O. spinipes* is inflicted by the ovipositor of *C. neglecta* at the time of oviposition.

The egg of *C. neglecta* is almost exactly 1 millim. in length and rather less than .5 millim. in diameter ; it is ovoid in shape, one end tapering rather more than the other, and, though the cross section is circular, one side is a little more curved than the other ; this tendency to the curved form so marked in *spinipes*' egg is so slight as only to be detected on close observation ; the egg is of a pearly whiteness. Though we have sufficient proof that the eggs of *C. neglecta* and *C. ignita* hatch under their usual conditions within a few hours of being laid, this egg enclosed in a pill-box and kept damp, though taken on the 13th, did not hatch until the morning of the 16th ; on the 19th, the larva cast its first skin ; on the 22nd, it cast its third skin (the date of the second not being observed, though the cast skin was found) ; on the 24th, it had cast a fourth skin. It appeared full-fed on the 28th ; but did not begin to spin until July 4th. I have already said that I did not place it in a proper cell, and the cocoon was not characteristic of either *neglecta* or *ignita*.—a larva left in this way in a pill-box merely spinning a flattish web or platform of silk, and the want of a proper cocoon no doubt leading to its death. It was fed on green grubs.

Further list of Coleoptera from the neighbourhood of Maidstone.—*Baris abrotani* (*pivicornis*), *B. lepidii*; *Amalus scortillum*, *Sitones crinitus*,* *puncticollis** and *humeralis*, and *Phytonomus murinus* in sand-pits, the latter in some numbers, and unaccompanied by *variabilis*; *Rhinoncus subfasciatus*, *Ceuthorhynchideus nigrinus*, *Ceuthorhynchus litura* on thistles, *C. asperifoliarum* on *Echium*, *Ceuth. campestris*,* *C. picitarsis* (1), *Cœliodes fuliginosus*, *Orobitis cyaneus*, *Gymnetron beccabungæ* (*var. veronica*)* in plenty, *Cionus blattariæ*, *C. pulchellus*, *Tychius meliloti*,* *Sibynia primitus*, one specimen in dandelion flower, *Orchestes pratensis*, *Apion flavimanum*, *pallipes*,* *difforme*, *varipes*,* *minimum*, *meliloti*, *ebeninum*, *Molytes coronatus*, *Plinthus*, *Polydrosus flavipes* (seen in some numbers, but only a set secured), *Sciaphilus*, *Bruchus loti*, *seminarius* and *cisti*; *Rhynchites conicus* and *uncinatus*. *Pachyta collaris** on flowers near hop gardens, in the poles of which it doubtless fed; *Callidium alni*,* ditto. *Donacia sagittaria*,* *lemnæ*, *impressa* and *affinis*; *Lema puncticollis*, *Galleruca calvariensis** and *Graptodera consobrina** on *Lythrum*, *G. helianthemii*,* *Crepidodera Chloris** and *Modeerii*, *Mantura rustica*, *obtusata* and *Matthewsii*, *Aphthona lutescens* in the greatest abundance, *A. herbigrada*,* *Phyllotreta nodicornis** on *Reseda*, *P. ochripes* and *tetrastigma*; *Thyamis anchlussæ* on *Echium*, conspicuous in the net by contrast with *femoralis*, of which there were thousands, at times completely covering the surface; *Th. atricilla*, *pusilla* and *gracilis*; *Psylliodes dulcamaræ*, *chalcomera* and *attenuata** (on hops). *Cassida equestris*; *Scymnus minimus*; *Phlæophilus Edwardsii*, one from moss on a stump. The species marked* were common.—H. S. GORHAM, Bearsted, January 6th, 1871.

Note on galls from the Drachenfels.—Having myself experienced the benefits derived from holidays recurring only at long intervals, I am naturally anxious to secure even the smallest entomological results obtained by others under similar circumstances. I therefore wish to mention that although I unfortunately missed seeing Dr. Jordan at Mr. Stainton's house on his return from the Rhine (*vide ante*, p. 174), that the tin full of galls collected by the former gentleman at the Drachenfels has been carefully overhauled by me. It contained—

- 1; specimens of the woolly polythalamous oak-galls of *Cynips ramuli*, Linn.
- 2; splendidly developed, large, bluish, monothalamous, pyriform galls on the leaves of beech, produced by *Cecidomyia fagi*, Hartig.
- 3; pea-shaped monothalamous galls on the leaf-stalks of *Populus tremula*, caused by *Cecidomyia tremulæ*, Winnertz, and answering to his variety, No. 2 (Linn. Ent., Vol. viii, p. 273).
- 4; incrassate stem-gall of *Cecidomyia cauliginella*, Schmidt, on *Silene nutans*.

Entomological tourists abroad would do good service in a neglected field, if, like Dr. Jordan, they would simply put such galls as come under their notice into a tin or box, noting the date and locality. There is not much trouble in doing this, and the result may be often valuable in ascertaining the geographical range of a species; as it by no means follows that the distribution of an insect tallies everywhere with that of its food-plant.—ALBERT MÜLLER, South Norwood, S.E., December 29th, 1870.

Note on the flight of Cynips.—In a posthumous paper by the late Mr. Walsh upon the *Eurytomides* (The American Entom. and Botanist, Vol. 2, p. 333), that careful observer, in the course of some remarks upon the wonderful restriction of the oak-apples of *Cynips Q. spongifica* to a very limited space, in spite of the surrounding circumstances being apparently equally favourable to their development, states his profound conviction that the gall-flies making those excrescences, although they have full-sized wings, scarcely ever use them. He further observes, that, out of thousands bred by him, he never knew an individual, whether of the vernal or autumnal type, to take wing spontaneously; and that only on one or two occasions, when he had placed the perfect insects on oaks to experiment as to the laws of their reproduction, had he seen one of them take wing, and then only for a yard or two. This reminds me of the only occasion upon which I have myself seen *Cynips* on the wing, upwards of fifteen years ago, on a hot morning about the end of May, when a full-winged example of one of our largest species settled on my coat. That individual must, however, have flown for a considerable distance, as I was walking in the middle of the highest part of the road on Wimbledon Common, facing Coombe Wood, and the insect flew down on me,—there being no oak-trees within many hundred yards. I do not know whether other observers have found the *Cynipidae* so sluggish as Mr. Walsh's note implies,—or whether his observations are restricted to the single American species. I have myself seen no *Cynips* flying but that above mentioned.—E. C. RYE, 10, Lower Park Fields, Putney.

Capture of a Tortrix new to Britain.—On the 3rd of July, 1870, I took several specimens of a *Tortrix* which I found in abundance on Craig Maige, a lofty mountain near the foot of Loch Laggan, in the county of Inverness. They flew up at every step on a ridge about 3000 feet above the sea. Last autumn I sent five specimens to Mr. Henry Doubleday for his examination, and he pronounced them to be varieties of *Sericoris irriguana* of Herrich-Schäffer. It is very similar to *Daleana*, but smaller, and the anterior wings are more pointed—all the specimens I took are males. Several other able entomologists have seen my specimens, and are of opinion that the species is distinct from *Daleana*, though Mr. Doubleday thought it possible that the latter was only a variety of *irriguana*.—N. COOKE, Liscard, 2nd March, 1871.

Capture of Hadena assimilis.—On the 2nd of July, 1870, I took two fine males at sugar, at the foot of the above-named mountain, and on the 3rd I saw a male and female at sugar, but unfortunately only secured the female; the male flew at my lamp and escaped. I do not adopt the name of *Crymodes exulis* for this species, because I believe the two are quite distinct species; I have compared a continental specimen of *exulis* with my Scotch specimens of *assimilis*, from which it appeared to be quite distinct, and the larva figured as that of *exulis*, of which I possess a copy, is more like the larva of an *Hepialus* than that of any other genus with which I am acquainted, and it seems to me very improbable that a moth like *assimilis* could come from such a larva.—ID.

[Dr. Staudinger set out more than 400 specimens of *Crymodes exulis*, of which fully 200 were bred—hardly two of these were precisely similar, varying from our

Scotch form known as *assimilis*, to specimens of very different colouring and marking. In short, the insect is far more variable than *Apamea oculatea*. Were we to learn to breed our Scotch *Hadena assimilis*, and, after breeding some 50 or so, to discover that it did not vary at all, but was always the same, that would simply prove that *Crymodes exulis* was more variable in Iceland than in Scotland, but would not in any way establish as a fact that *Hadena assimilis* and *Crymodes exulis* are two distinct species.—Eds.]

Captures, &c., of Lepidoptera near York, in 1870.—The spring of 1870 was bad for entomological purposes, nothing but cold east winds, so we could pay very little attention to the sallows until the end of April, and then they were nearly over. Two *T. opima* and a few *L. lobulata* were the only species worth mentioning. May, however, brought better prospects, insects appearing frequently in my breeding cage. During the month I bred *C. curtula*, *C. reclusa*, *N. dromedarius*, *D. furcula*, *D. falcula*, *C. duplaris*, *E. pimpinellata*, *lariciata*, *fraxinata*, *subnotata*, *minutata*, *castigata*, *assimilata*, *venosata*, &c. Upon tree boles I took *E. indigata*. *E. lariciata* was not rare amongst larch. Towards the latter end of the month, insects began to appear at sugar, and in June, they were abundant, I obtained fine series of *T. derasa* and *batis*, *C. duplaris*, *A. leporina*, *L. pudorina* and *comma*, *X. sublustris* and *hepatica*, *N. saponariae*, *A. unanimis*, *A. herbida*, *H. suasa*, *D. cucubali*, &c. *P. lignata* (the first brood) was rather common in our bog, and *C. sparsata* began to appear. I also took a fine *S. vetulata*, which, with one in 1869, I believe to be the first occurrence of the insect here: also *E. pulchellata*, *valerianata*, and *denotata*, *A. luteata*, *M. albicillata*, *H. impluviata*, appeared now and then. In the beginning of the month, I bred a fine series of *D. carpophaga* and a few *capsicola*. In the early part of July, Mr. Carrington and I took *E. pulchellata* pretty freely; the larva of this insect varies much, and is very subject to parasites. During July we obtained the following species at sugar: *A. fibrosa*, *T. interjecta* and *janthina*, *O. suspecta* (a long series), *A. aquilina*, *H. costæstrigalis*, *C. Haworthii*, *M. literosa*, &c. On the 18th of this month, I met Mr. Carrington and Mr. Taylor, of Leeds, in Cawood Wood, for the purpose of searching for *T. roboraria*, we having heard that the species had been taken there. We found no *roboraria*, but, instead thereof, three brethren of the net, Mr. Birchall and his son, and Mr. Baxendale, of Halifax, with whom we spent a very pleasant day. Considering the fine weather, the paucity of insects was remarkable: however, we made an appointment to have a day at York in the following week, with the Messrs. Birchall, to look for *E. vespertaria*. Accordingly we started for our hunting ground early on the evening of the 16th, and, after sugaring our trees, took a few *A. inornata*, &c. Next morning we rose early, and proceeded to run the blockade, for, be it known, that the proprietor of the estate had offered 5s. reward for the apprehension of any entomologist found thereon! Soon after 7 a.m., *vespertaria* made its appearance, and by breakfast time we each had a fair series; after breakfast a few were taken, but the flight was over: females were very scarce, only one was taken. After an early dinner, we tried searching and beating in the wood, and took several fair things, *L. dictæoides*, falling to Mr. Carrington's lot. Towards evening we began our return to old Ebor, and on the way found a few larvæ of *C. curtula* and *reclusa*, in spun-together aspen leaves. Early in the month I found a few specimens of *S. basistrigalis*, but did not

know of my good fortune until too late, and it also produced, by mothing at dusk in a bog, *A. immutata* and *imitaria*, *C. selasellus*, *S. pallida*, *G. papilionaria*, *E. assimilata* and *subnotata*. I think the latter must be the most abundant "pug" we have; a patch of ground of about six yards square absolutely swarmed with it. *E. tenuiata* was bred from larvæ taken in the spring, and we began to search for the larvæ of *C. sparsata*; I have several times taken both larva and imago of this species on the same night; the larva is not difficult to find when you get accustomed to its habits; it appears to feed solitarily on the under-sides of the leaves, making holes not unlike those of *E. assimilata* in hop, and is a cannibal in confinement. Near the end of the month, we took the larva of *E. valerianata* very freely, but obtained only two of *fraxinata*, though about thirty of *lariciata*. In August I took a very fine series of *C. xerampelina* and *A. ravida*. At heather bloom, *A. agathina*, *N. neglecta* and *glareosa* occurred, and *E. apicinarum* was not uncommon in the bog. In the early part of the month the second brood of *P. lignata* began to appear; it is very much smaller and generally more common than the first brood. I also took a specimen of *E. lutulenta*. One night when I and Mr. Carrington were sugaring with little success, we found that some recently cut down birch-trees had much greater attracting powers; some species, such as *X. silago* and *ferruginea* were swarming at them, though rare at the sugar; a few *N. fulva*, very variable, were found the same night. In Cawood Wood we obtained one larva of *N. dodonea*. In the latter part of the month we obtained a few of a *Peronea* in the bog, of the *comparana* group, but I think it cannot be that species. Autumnal insects were very abundant at sugar, and in the early part of October I took two examples of *A. saucia*; also a very fine series of *T. firmaria*, which makes its appearance very late with us. On the 6th October I took a very fine specimen of *T. batis*!—W. PREST, York, January, 1871.

Difficulty of rearing Opadia funebrana and Homæosoma nebulella.—One day last autumn I noticed, at a fruit shop, just such a lot of plums as I had long been looking out for. Every plum contained either a larva or the traces of one, so I purchased a quart or two, carefully selecting those that were still occupied, and put them into various vessels at home, placing bits of bark on the top of each lot. Very soon the bright pink larvæ, being full fed, began to leave the fruit and crawl restlessly about, but finding the pieces of bark to their taste, they soon spun up upon them, gnawing small hollows and working the particles of bark into their cocoons, so as to render them as little conspicuous as possible, and there appeared to be good promise of a fine series of *Opadia funebrana*.

One cocoon being spun between two chips got broken in removing them, so that the larva became visible. It made no attempt to repair the damage, but remained perfectly still, in the larva state, and alive, till March or later, when it died, as did the occupants of all the cocoons except four, from which the moths emerged early in June. On examination I did not find a single dead pupa, all had sulked and died in the larva state, but the reason is beyond my comprehension, unless it is that they required to be kept out of doors exposed to the weather, and that indoors they became too dry.

In the similar case of a host of larvæ of *Homæosoma nebulella* in seed-heads of

Carduus nutans, all died in their cocoons in the larva state, except one prececcious individual which thought proper to emerge in the autumn, a few weeks after the seed-heads were collected.—CHAS. G. BARRETT, Norwich, 12th October, 1870.

Notes on Butterfly-collecting in Switzerland.—Having devoted a considerable amount of time during the past year to collecting in Switzerland, I send you a short account of my captures among the butterflies, thinking it may interest some of your readers. Unfortunately, I cannot say much about the moths, as I took comparatively few species, principally owing to weak health, which prevented me from doing any night-work. Butterfly hunting in Switzerland is very different from what it is in England: the number of species to be taken is much greater, and the individuals of some species swarm to a degree which can hardly be imagined by those who have not seen it. As an instance of this, I may mention that one day when high up among the mountains, I came upon a damp place by the side of a small stream: this was absolutely covered by butterflies, so as almost to conceal the ground: on disturbing them, and striking with my net as they rose, I obtained at one sweep a living mass, which must have consisted of at least 200 individuals. They were all, or nearly all, “blues” and “skippers,” chiefly *L. Argus*, *semiargus* (*Acis*), and *Alsus*, and *Pyrgus Alveus*. Altogether, in the course of the year, I took more than 112 species of butterflies. I collected principally in three places:—Bex, in the Rhone Valley; Sepey, in the Ormond Valley; and Zermatt, including, under this name also, the Riffelberg and Gornergrat, which rise above it. This last was by far the most interesting locality, but I was there for barely a fortnight, and as we had heavy rain nearly every day, I was not so successful as I might otherwise have been. I also made my visit somewhat too late (the last week in July), when many of the species were over.

I now proceed to give a list of the butterflies observed. The specific names used are those employed in Mr. Kirby's “Manual of European Butterflies.” When I have given a date, it marks the earliest appearance of the insect, according to my experience.

Papilio Fodalinus (April 17th) and *Machaon* (May 21st). *Parnassius Apollo* (May 19th) and *Delius*. The former common everywhere in the mountains; the latter I only saw on the Riffelberg; it seems to frequent damper situations than *Apollo*.

Aporia crataegi (May 19th). *Pieris brassicae*, *rapae*, and *napi*. All abundant. I did not see *brassicae* till June 3rd. *Collidice* (June 17th). This mountain species flies very strongly and wildly, and is difficult to catch. *Deplidice* (April 2nd). Bex. Rather common for about a fortnight.

Anthocharis Belia (var. *Ausonina*). April 26th. Near Bex, but very local; *cardamines* (April 7th). *Leucophasia sinapis* (April 7th). *Colias Phicomene* (June 21st). Very common in the mountains. *Hyale* (April 15th). *Eclusa* (April 18th).

Gonepteryx rhamni. In all, 17 species of *Papilionidæ*.

Melitæa Cynthia. High mountains above Bex, and on the Riffelberg. *Artemis*, *Cinxia*, *Didyma*, and *Athalia*. All early in May, and common. *Athalia* has the highest vertical range but becomes very small at great heights; one, which I took on the Riffelberg, is less than an inch in alar expanse. *Dictynna* (May 25th). Sepey. *Argynnis Amathusia*. Common beyond Les Plans, near Bex. *Euphrosyne*

(April 23rd). *Pales*. Common on the mountains; a curious dark variety occurred on the Riffelberg. *Dia* (April 13th). *Daphne?* Sepey. *Lathonia* (April 7th). *Aglaia*, *Niobe*, *Paphia*. All common. A single specimen of *Paphia* ♀ var. *Valesina* in the Zermatt Valley.

Grapta C-album. *Vanessa polychloros*, *urticæ*, *Io*, *Antiopa*. All more or less common. *Pyrameis cardui*, scarce. *Atalanta*. *Limenitis Sibylla*. Common at Bex and Sepey. *Camilla*. As common as *Sibylla* at Bex, but apparently confined to the hot Rhone Valley, as I never saw it at Sepey. *Nymphalis populi*. Sepey. Apparently rare, as I only saw one specimen. *Apatura Iris*. Sepey. Also very rare.

Melanagria Galathea (May 28th). A perfect pest in all the lowlands. *Lasiomata Mæra*, *Hiera*, *Megæra*, *Ægeria*. I am not quite sure of *Hiera*, but took two insects apparently referable to this species at Sepey. *Dejanira*, Bex. *Hipparchia Proserpine*, *Hermione*, *Semele*, *Cordula*. All common. *Phædra*. Bex, in August. *Lycaon*. Zermatt, common. *Janira*, *Hyperanthus*. *Canonympha Iphis*. Bex. *Philea*. Abundant on mountains. *Pamphilus*. *Chionobas Aello*. I only took one worn specimen of this mountain species. Sepey. *Erebia Melampus*, *Eme*, *Alecto*, *Manto*, *Tyndarus*, *Gorge?* *Goante*, *Pronoë*, *Medea*, *Ligea*, *Euryale*. Many of these were widely distributed on the mountains, but *Manto* I only took on one mountain above Bex, and *Alecto* seemed confined to the summit of the Gornergrat, some 10,000 feet above the sea. *Medea* and *Ligea* were taken at lower elevations at Bex and Sepey. 55 species of *Nymphalidæ*.

Nemeobius Lucina (April 22rd). Common. Bex and Sepey. One species of *Erycinidæ*.

Thecla betulæ. A few worn specimens near Montreux in the autumn of 1869. *W-album*. Bex. *Pruni*, very common in the neighbourhood of Bex. *Quercûs*. *Rubi* (April 12th).

Polyommatus virgaureæ. Zermatt. *Eurydice* (May 25th). Sepey. Common. I took one strange variety of the ♀ of this species, in which the ordinary spots of the under-side were collected into black marginal streaks. The right and left wings differed, and their upper-surface also differed somewhat from the type. The insect was somewhat crippled, which may account for the variation. *Dorilis* (May 5th).

Lycæna Tiresias. Bex and Brunnen. *Ægon*. *Argus*. *Hylas*. One specimen at Bex on May 4th. *Pheretes*. Zermatt, rare; I only took two, both females. *Orbitulus* and *Eros*, common on the mountains. *Medon*, *Icarus*, *Adonis*, *Corydon*, *Dorylas*, *Damon*. All common. *Donzelii*, Zermatt. Why should this species be confined to larch woods? *Argiolus*, *Alsus*, *Semiargus*. All common. *Cyllarus* (April 20th). Common at Bex. *Alcon*. One or two on the mountains. *Arion*, common. 28 species of *Lycænidæ*.

Pyrgus malvarum. Bex. *Lavateræ*. Rather scarce, but widely distributed. *Alveus*. Common on the mountains. *Cacaliæ*. Rare. Zermatt. *Malvæ*. Very common through the summer. *Sao*. Zermatt.

Nisoniades Tages. *Pamphila lineola*, *Sylvanus* and *comma*. All common. *Cyclopides Paniscus* (May 21st). Common at Sepey. 11 species of *Hesperidæ*.

This seems a very fair number of species for so confined a district as that in which I worked: yet several species are absent from the list, which I should have expected to be common. Among these are *A. Selene* and *Adippe*, and *H. Tithonus*.

P. Phlæas I never saw alive, but was shewn a single specimen which had been taken in 1869. In conclusion, I may mention that I have duplicates, in good condition, of many of the species mentioned in the foregoing list, and shall be happy to exchange them for good specimens of other European species.—R. P. MURRAY, Mt. Murray, Isle of Man, December 9th, 1870.

Description of the larva of Miana arcuosa.—Thanks to the persistent efforts of Mr. James Batty, of Sheffield, I am able to offer a description of the larva of this species, as I believe for the first time.

On the 23rd of May, 1870, Mr. Batty found several larvæ and subsequently more, and also some pupæ by searching the crown of the roots of *Aira caspitosa*; and he kindly sent me three of the larvæ on the 24th, which were then apparently full grown. To the two most advanced I gave some cut lengths of the lower part of the grass stems placed on a bedding of portions of the roots carefully picked to pieces, so as to ensure the absence of any other creature. The third larva after being figured and described, was placed in a pot with a small growing plant of the grass, which had also been carefully examined; it soon crept into the middle of the small plant, and I did not see it again, for I was unwilling to interfere with it.

The other two I looked at each time of feeding, up to the 2nd of June, when I found that one of them had partly spun together two pieces of the dried grass sheath; after that, being satisfied with this hopeful event, I did not disturb them further.

The first moth, a male, appeared in the cylinder that confined the growing plant, on June 30th; only one of the other two emerged, on July 2nd, a female: and about the same time Mr. Batty reported his having bred a series of both sexes.

The full-grown larva varies from five-eighths to three-quarters of an inch in length, is moderately slender, the last three segments tapering a little towards the hinder extremity, the back just a very little arched in front, the head smaller than the second segment, and flattened above towards the mouth; with these exceptions the figure is tolerably cylindrical, and its texture of considerable toughness. The ground is either a delicate cream, or pale flesh colour, with three transverse bars of pale brownish or deeper flesh colour on the back of each segment; these bars are all interrupted down the middle of the back by a distinct dorsal stripe of flesh colour still paler than the ground; the sub-dorsal stripe is less pale and less distinct; the spiracles are black and the region round them rather puffed; the ventral surface and pro-legs of the pale ground colour: the head is glossy brown, darkest round the mouth; a paler brown equally glossy plate is on the second segment, divided by a slender line of flesh colour; and a still paler brown shining plate is on the anal tip; the anterior legs are of the same pale brown colour.

I must not omit to mention that the Rev. E. Hallett Todd most kindly sent me two larvæ identical with the above, which he found in the roots of *Aira caspitosa* in May, 1867: but they died in the pupa state, and remained as an enigma unsolved till this season.—WM. BUCKLER, Emsworth, November 7th, 1870.

Comparative descriptions of the larvæ of Chesias spartiata and obliquaria.—It is a great pleasure to me to acknowledge my numerous obligations to Mr. W. H.

Harwood, of Colchester, and in this instance especially for all the trouble he has so kindly and repeatedly taken to furnish me with larvæ of our two British species of *Chesias*. For three seasons in succession I have thus taxed his patience, because I did not like to speak before I had made quite sure of the distinctive characters of these larvæ, and had satisfied myself still further by breeding the moths.

From eggs of *spartiata* forwarded by me to Mr. Hellins in October, 1868, the larvæ were hatched in February, 1869, earlier probably than is natural to the species, on account of their not being exposed to the cold, but the imago was not bred till October 9th; the time for finding the larvæ at large appears to be the month of May or thereabouts, and so far as my experience goes, September and October are the months for the moth; there is no sign of an earlier brood.

Of the egg of *obliquaria* I cannot speak; but the larvæ were sent me by the Rev. E. N. Bloomfield and Mr. Harwood, on July 20th, and again on September 6th and 26th, 1869; the perfect insects appearing this year (1870), the earlier batch between the 17th and 21st of May, and the later between the 16th and 20th of June; with this species also, therefore it appears there is one brood in the year, variable in the period of its flight.

I now offer descriptions of the full-grown larvæ, giving first the points in which they are both alike, and afterwards those in which they differ.

Both species then have the same food-plant, *Spartium scoparium*, and are alike in form; when full-grown, they are about an inch or a trifle more in length, uniformly cylindrical and slender: the last two segments tapering a little to the end of the anal flap; when they are stretched out at full length in repose, the head is bent down and the legs drawn up towards it, an attitude which gives rather a swollen look to the anterior extremity; the ventral and anal pro-legs are moderately well developed.

Spartiata is generally of a deep full green on the back, sometimes rather yellower-green on the sides; it has a dorsal line of much darker green between two lines of paler green than the ground colour; the sub-dorsal *broad stripe* is as dark as the dorsal line, and is *edged above and below with a fine thread of much paler green*; the spiracular region is puffed, the spiracles red, faintly outlined with black; the inflated sub-spiracular stripe is either primrose-yellow or white, melting a little above into the green; the anal flap is often rather a deeper green than the ground colour; the ordinary minute tubercular dots are in the usual position, each bearing a short brown bristle: the ventral surface is green with three pale stripes of whitish-green, the central being the widest. A yellow variety of this larvæ often occurs, exhibiting more or less distinctly the details above described; it is generally found feeding on the broom blossoms, to which it assimilates well.

Obliquaria is either of a full-green or inclining to bluish-green in the ground colour, the dorsal line of much darker green is edged with a line of very bluish-green much paler than the ground colour; the sub-dorsal *line* is thin, *yellow or greenish-white*, very finely edged above sometimes, and *always below* with a line of dark green,—this *pale* sub-dorsal line is, by aid of a lens, seen to be composed of numerous little transverse bars or streaks with the slightest interval of the ground colour between them; the rather broad inflated sub-spiracular stripe is pure white or yellowish-white; between the sub-dorsal line and the sub-spiracular stripe there is a very thin and fine tortuous line of very bluish-green, paler than the ground

colour, its course defines the boundary of the puffed region above the spiracles, and these last are pale yellow faintly outlined with black; the head generally bluish-green; the tubercular dots are black, each bearing a short bristle, but they are very minute; the segmental folds yellowish; two very short anal points sometimes occur, but generally there is only a slight swelling on each side below the flap, the point of which shuts down between them.

The ventral surface is of the green ground colour, with a central paler ochreous-greenish stripe between two lines that are composed of little transverse streaks, similar to those of the sub-dorsal line before described.—WM. BUCKLER, Emsworth, November 17th, 1870.

Review.

"THE HONEY BEE," ITS NATURAL HISTORY, PHYSIOLOGY, AND MANAGEMENT, by Edward Bevan, M.D., revised, enlarged, and illustrated by William Augustus Munn, F.R.H.S., &c. Van Voorst, 1870.—This edition of Dr. Bevan's work on the honey-bee is revised, enlarged, and mutilated; it is also disfigured by a number of coloured caricatures of the bees and their combs; we refer in proof of the latter assertion to plate G. The three sexes of the bee are there represented, as we are informed on the page descriptive of the figures; at C a grotesque representation of the drone is seen from above; at F, the under-side is shown, and, strange to say, the anterior pair of wings are attached beneath the thorax, close to the coxæ of the anterior legs,—being also much smaller than the posterior pair! Of the plates intended to illustrate the anatomy of the bee we need only refer to plate L. Fig. A represents an antenna, but it is not like that of any honey-bee with which we are acquainted; three cup-shaped joints are represented at the apex of the scape, which certainly exist in no sex of any honey-bee. The figures have both letters and numbers quite at variance with the description of the plates; the anatomical plates being, in fact, full of confusion and error.

We regret that we are unable to speak more favourably of the literary portion of the work incorporated by Major Munn, and we must protest against his having in no way distinguished his own interpolations from the valuable work of Dr. Bevan, and against the frequent and quite inexcusable alterations of the original text. Dr. Bevan's work gave the world an accumulation of valuable information up to the time of its publication, and was a valuable text-book to the apiarian; but the same remarks can by no means be correctly applied to the present edition.

The great aim of the work appears to be to laud the superiority of Major Munn's bar-and-frame-hive over all other inventions; to us, it appears to be a clumsy contrivance, adopted by no modern bee-master who aims at a knowledge of the mysteries of the hive. The simple, modern, frame-hive with moveable bars is so admirably adapted both for observation and economy, that we have no doubt Major Munn's invention will continue to enjoy the obscurity in which it has hitherto remained.

Major Munn has ventured to attack Dr. Siebold's great discovery of Parthenogenesis; but he adds, at page 336, "this is not the occasion to combat the errors beyond stating one or two facts, which I believe to be fatal to the whole conclusion." The first fact proves, on examination, to be a mere supposition:

Dr. Siebold states that all the drones had been killed in August, in a hive he had under examination; Major Munn thinks there might have been a few still "skulking" about. We are to believe, that, when so important an investigation was being conducted by Dr. Siebold, these *supposed skulkers* were overlooked. We are told that no description is given by Dr. Siebold of the "*spermatozoa*;" but, since they are repeatedly described by him as "active," or "motional filaments," that is, thread-like, we cannot accept the assertion. Major Munn claims to having discovered, by the aid of the microscope, that it is the lower end of the egg, that which is attached to the cell, which holds the "*spermatozoa*." Dr. Siebold distinctly states, repeatedly, that in order to observe the "*spermatozoa*," he ruptured the "*lower pole*," so that the yolk gradually flowed out, leaving an empty space at the "*upper pole*," and that "in the superior space of the egg, which had become empty," he saw at one time "active," and in other instances, "motionless filaments" or "*spermatozoa*." Before we can give implicit credence to Major Munn's discovery as to the situation of the "*spermatozoa*," we must learn that some more accurate observer has confirmed it;—remembering plate L above referred to, in fig. A of which, the number of joints is incorrectly given, not a single joint being like any in the bee, and joints 1, 2, 3, called the accumulating trumpets of sound, have no existence in any bee we have ever seen;—and yet the whole is stated to be figured by the aid of the microscope!

From the following passage we are led to suppose that Major Munn regards all the species of aculeate honey-bees as mere varieties of *A. mellifica*:—"wherever the bees construct combs to raise their brood in, or receive the stores of honey, with the bases of the cells in a vertical direction, and the cells themselves horizontal, there will be found the true species of *Apis mellifica*;" so that we are to regard *A. dorsata*, *A. florea*, and *A. indica*, as mere varieties.

The first 167 pages of the book are entirely devoted to Major Munn's own observations, and to extracts from other works. In these there will probably be found some useful hints for the bee-master; for it can scarcely be possible, considering the number of years during which Major Munn has attended to bee culture, that some new phase in their economy has not presented itself to him: this portion of the work will no doubt be fully investigated by his brother apiarists, who will not fail to credit him with all such discoveries as he has been fortunate enough to make.

ENTOMOLOGICAL SOCIETY OF LONDON, 20th February, 1871. A. R. WALLACE, Esq., F.Z.S., President, in the Chair.

Mr. Bond exhibited a hybrid between ♂ *Bombyx Pernyi* and ♀ *B. Yamamai*, bred by Dr. Wallace, presenting the form of one parent with the colour of the other. Also a *B. mori*, still retaining the larval head.

— Mr. McLachlan called attention to the first record of such a malformation, being known by O. F. Müller in "*Der Naturforscher*" for 1781.

Received "Da Mr. Smith said that Prof. Owen had observed that the hieroglyphic inscriptions

on the monuments in Egypt were obliterated by the mud nests of a wasp, *Rhynchium brunneum*; and Mr. Smith remarked that an example of this wasp had been found by Dr. Birch when unrolling an Egyptian mummy.

Mr. Smith further called attention to a passage in "Pepys's diary," dated in 1665, proving that observatory bee-hives were then in existence.

Mr. Müller read a paper on the "Dispersal of non-migratory insects by atmospheric agencies," in which he had collected numerous records of showers of insects after hurricanes and other violent atmospheric disturbances; and he stated his belief that by these means many points in the present geographical distribution of species might be explained. In the discussion that followed, it was suggested that migration did not exist in insects, in the sense to which the term was applied to birds, and that the so-called migration of the former, either habitual or occasional, was in a great measure dependant upon the supply of food.

6th March, 1871. The President in the Chair.

The following gentlemen were elected:—Baron De Selys-Longchamps, as Honorary Member; the Rev. T. A. Preston, as Ordinary Member; and Mr. G. C. Champion as Subscriber.

Mr. Jenner Weir exhibited a small collection of butterflies from Madagascar.

Mr. Smith exhibited two small branches of ash, from which the bark had been removed by a hornet, as observed by the Rev. J. Hellins. He found that Réaumur had recorded a similar habit, and he believed it was for the purpose of extracting the sap for food, and not for obtaining building materials for its nest, the latter, according to his experience, always being formed from dry and decayed wood. Mr. Smith further called attention to an assertion that *Fulgora* is luminous, in a letter from the Marquis Spinola published in the "Revue Zoologique" for 1844: he maintained his belief that *Fulgora* is occasionally luminous, notwithstanding what had been said and written to the contrary.

Mr. Dunning exhibited a parasite from the peacock, which was clearly *Pediculus pavonis*, of Linné, though by Nitzsch, and modern writers, it was called *Goniodes falcicornis*, Nitzsch quoting Linné's name as a synonym.

Mr. Müller read "Notes on a *Cecidomyia* forming galls upon *Campanula rotundifolia*."

Mr. Lewis exhibited instances of antennal malformation in *Lepidoptera*.

Dr. Sharp communicated "Notes on some British species of *Oxyptoda*," in which he described four as probably new to science.

Mr. Lowne read a paper "on immature sexuality in insects," in which he stated his belief that what appeared to be species sometimes originated from the early development of the sexual organs before the acquirement of adult characters. He also thought the larval and pupal conditions of insects were acquired, and not direct, stages of development.

Mr. Briggs detailed experiments made with a view of determining whether the numerical proportion of the sexes in insects, or sex itself, depended upon the proportion of the larva; and stated that the results negatived any such supposition.

REMARKS UPON THE CLASSIFICATION OF THE *HESPERIDÆ*.

BY A. G. BUTLER, F.L.S., &c.

In a recently published part of the Regensburg "Correspondenzblatt," my paper on the *Hesperidæ* in the British Museum (Ent. Mo. Mag., p. 55, Aug., 1870, *et seq.*) has been rather roughly handled by Dr. Herrich-Schäffer; and as that gentleman has sent me the pages of his "*Prodromus*" in which his criticisms appear, I feel bound to take some notice of them.

In my paper above referred to, I objected somewhat strongly to the manner in which Dr. Herrich-Schäffer had indicated a number of new species, the space accorded to each being one or two lines of a new form of description, unaccompanied by localities. Dr. Herrich-Schäffer replies, that the absence of localities is due to the poverty of his collection, which being, to a great extent, derived from ancient cabinets, has been, for the most part, furnished with localities from the works of Donovan and Fabricius, "In Indiis," &c.; then, after enumerating the various cabinets, public and private, to which he has had access,* to my infinite relief he tells us that he "never intended to give descriptions, and, least of all, descriptions after the manner of Hewitson's or Felder's."

In his remarks respecting my identification of *Hesperia*, Dr. Herrich-Schäffer gives me the credit of departing from my own rules, but as I am convinced that he has not rightly understood the rules by which I was guided, I will again state them as plainly as possible:—

1. If a genus be *insufficiently* characterised, and no type be specially mentioned by the author, the person who subsequently divides the genus ought to take the first species mentioned as the type.
2. If a genus be divided by its author into two or three sections, that section which agrees best with the description ought to be considered typical.

Following out these rules, I adopted the first species of the second section as the type of *Hesperia*, and, as I considered the slightly marked variety of *P. Ladon* of Cramer to be that species, I rejected Swainson's genus in favour of Fabricius'; as regards the "paullo major" of the Fabrician description, it is nothing to the vague comparison in the description of *Pap. Pirithous*, Fabr. (an *Ixias* compared with an *Amauris*).

* Amongst these he mentions the collection of the British Museum, which, to my certain knowledge, he cannot have seen for the last eight or nine years, and which, having been only recently arranged, must, when he saw it, have been fully in a condition to justify his remark—"Dass bei dieser Gelegenheit keine verwendbaren Notizen gesammelt werden können."—A. G. B.

The succeeding observations are chiefly touching the position of species in the various genera: as regards these I need merely remark that, as I have tested the characters offered by neururation and leg-spines, and find little or no variation, even between such remote groups as *Goniurus* and *Achlyodes*, I have preferred to follow out the more reliable characters offered by the palpi and antennæ, which certainly separate the *Hesperidæ* into very natural looking genera; as to *Hesperia Aunus*, Fabr., being a "*Lycænine*," an examination of the type in the Banksian cabinet would convince Dr. Herrich-Schäffer himself that it was identical with Hübner's "*Nais*," which is certainly a *Goniurus*.

The new genera founded in my paper must stand or fall upon their own merits: up to the present time I have been daily more convinced that they are natural and well-defined.

British Museum: March, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 3).

BY H. W. BATES, F.Z.S.

XYSTOSOMUS HILARIS, n. sp.—*Oblongo-ovatus, paulo convexus, læte viridi-cæneus, antennis palpis pedibusque rufo-testaceis, capite antice thoracis elytrorumque marginibus rufescentibus; capite sulcis frontalibus longis et profundis; thorace transversim quadrato, antice paululum rotundato et angustato, angulis posticis rectis, basi utrinque fovea magna lævi et sulco transverso, aliquantum obliquo, lineam dorsalem haud attingenti, juxta angulum carinato: elytris basi thorace latioribus, regulariter ovatis, striis omnibus fortiter impressis et punctatis, 2^{nda} apicem versus profundiori sed apicem haud attingenti, 3—7 ante apicem evanescentibus, striola recurva profunda antice hamata; corpore subtus rufo-piceo.*

Long. 2½ lin. ♂. Tars. ant. art. 2 dilatatis.

Ega; one example found running on the trunk of a felled tree in the sun. The interstice between the two marginal striæ of the elytra is a little narrower than the rest.

XYSTOSOMUS SCULPTICOLLIS, n. sp.—*Obovatus, fortiter convexus, nigro-cæneus, antennis palpis pedibusque flavo-testaceis; capite sulcis frontalibus latis, marginibus (prope oculos) acute carinatis; thorace quadrato, antice gradatim vix rotundatim angustato, dorso valde convexo et sex costato, costis duabus medianis integris approximatis, exterioribus gradatim brevioribus, basi utrinque late impresso, lævi, sulculo obliquo per impressionem ducto, juxta angulum carina elongata; elytris ovatis, grosse punctato-striatis, striis prope basin sulciformibus, prope apicem lævioribus, 2^{nda} ibi fortiter impressa, striola recurva, profunda, curvata.*

Long. 1½ lin.

This extraordinary little *Bembidiide* is closely allied to *X. hilaris*, and was found in a similar situation at Ega, Upper Amazons, running on the trunk of a felled tree. The longitudinal ribs of the thorax are narrow, and only the two central ribs reach the anterior and posterior margins.

XYSTOSOMUS ELAPHRINUS, n. sp.—*Læte æneus, splendidus, hic illic viridi-tinctus, antennis palpis pedibusque piceo-rufis; oculis maximis, sulcis frontalibus elongatis, margineque juxta oculum fortiter sulcato; thorace parvo, transversim quadrato, antice paulo angustato, medio vix subangulatim dilatato, marginibus postice sinuatis, angulis posticis productis, acutis; supra paulo convexo, carina juxta angulum posticum intus curvata, basi fortiter oblique sulcato, linea longitudinali basi fortiter impresso: elytris oratis, convexis, marginibus circa humeros reflexo-explanatis, supra punctato-striatis, stria 1^{ma} antice vir impressa, 2-6 ante medium evanescentibus, 3-9 grosse punctatis et fortiter impressis, disco posteriori lævissimo, striola recurva antice fortiter hamata.*
Long. 1 $\frac{3}{4}$ lin.

Ega. Also a remarkable species, which differs in form from the other species of *Xystosomus*, but not in its essential characters. The head is very similar to that of the genera *Elaphrus* and *Notiophilus*. *Bembidium cayennense*, Dej., appears to resemble it in form and sculpture, but it differs in several points, and I do not think the apical striola would have been overlooked by Dejean.

OBS.—None of the *Bembidiidæ*, except of the *Tachys* group (Gen. *Tachys*, *Pericompsus*, *Xystosomus*, &c.), are found in the equatorial plains of South America. Species of the *Notaphus* group are numerous on the Mexican plateau, and re-appear in many species in Chili.

LIOTACHYS, nov. gen. (*Bembidiidæ*).

Corpus gracile, elongatum, convexum, nitidum. Caput parvum, collo crasso, tumido; sulcis frontalibus latis, profundis; oculis prominentibus. Palpi dense pubescentes. Antennæ robustæ, elongatæ, corpore paulo breviores, articulis 2-11 pubescentibus. Thorax cordatus, postice fortiter constrictus. Elytra elongato-ovalia, lævissima, absque striis, stria suturali sola prope apicem distincta, striola recurva fortiter impressa, disco utrinque punctis duobus setigeris. Pedes elongati, graciles, toti pubescentes; tibiæ anticæ ad apicem angustæ, simplices.

The curious little insect on which this genus is founded resembles in form the genus *Anthicus*. It is well distinguished from *Tachys* and *Pericompsus* by the long and robust antennæ, which have the further peculiarity of being dark in colour, with the 5 terminal joints white.

The head and mandibles are of the same form as in *Pericompus*. The thorax is very convex, cordate and greatly constricted behind, forming a narrow waist to the body. The elytra are destitute of striæ, even the marginal and sub-marginal striæ being deficient. The apical striola, however, so characteristic of the *Tachys* and *Trechus* groups, is well developed, and is connected with a trace of the sutural stria at the apex; between the two is an elongate impression, simulating a second striola.

LIOTACHYS ANTENNATUS, n. sp.—*Rufo-testaceus, nitidus, pedibus pallidioribus; elytris leviter infuscatis, basi maculaque utrinque subapicali rufo-testaceis; antennis art. 1—6 fuscis (1—2 pallidioribus), 7—11 albis.*

Long. $1\frac{1}{5}$ lin.

Santarem, Amazons; on muddy banks of pools. In my own collection and that of Mr. Grut.

TACHYS ÆNEOPICEUS, n. sp.—*Oblongus, convexiusculus, æneo-piceus, palpis antennisque basi et pedibus flavo-testaceis; capite sulcis frontalibus fortibus, postice extus valde curvatis; thorace valde transverso, postice modice attenuato, angulis posticis productis, acutis, sulco basali margine parallelo, integro, prope angulos fovea lævi, extus sine carina; elytris elongato-ovatis, striis quinque punctatis impressis suturali excepta apicem haud attingentibus, stria marginali profunda, integra; stria tertia punctis majoribus setiferis duobus.*

Long. $1\frac{1}{2}$ lin. 5 exempl.

Banks of River Tapajos. In some specimens the brassy-green colour is dark and brilliant, but the piceous ground colour is always visible on the sides.

TACHYS PLATYDERUS, n. sp.—*Oblongo-ovatus, convexiusculus, rufo-testaceus, antennis basi pedibusque flavo-testaceis; capite sulcis frontalibus postice extus curvatis; thorace latissimo, postice modice attenuato, angulis posticis productis, acutis, basi utrinque fortiter sinuato, stria dorsali prope basin in fovea profunda desinenti, basi utrinque sulco transversali et prope angulum plica elevata lævi; elytris breviter ovatis, striis utrinque duabus solum distinctis vix punctulatis, in loco striæ tertiæ punctis majoribus duobus, striis marginalibus et sub-marginalibus prope apicem fortiter impressis et curvatis.*

Long. 1 lin. 4 exempl.

Ega and Santarem, Amazons.

TACHYS FRATERCULUS, n. sp.—*T. platydero proxime affinis, differt striis elytrorum utrinque tribus distinctis fortiter punctatis; rufo-testaceus, elytris medio indistincte infuscatis; thorace transverso, angulis posticis*

productis, acutis, basi utrinque fortiter sinuato, medio lobato-producto: cætera ut in T. platytero.

Long. 1 lin. 1 exempl.

Santarem, Amazons.

TACHYS SULCIPENNIS, n. sp.—*Sub-convexus, rufo-piceus, postice pallidior, partibus oris, antennarum articulo basali pedibusque flavo-testaceis; capite sulcis frontalibus postice extus curvatis; thorace transverso, cordato, antice valde rotundato-dilatato, postice valde sinuatim-angustato, angulis posticis productis, margine basali sub-recto, stria dorsali prope marginem posticum in fovea desinenti, basi utrinque sulco transverso, prope angulum late foveato; elytris ovatis, striis utrinque tribus, ad basin solum impressis, stria tertia bifoveata.*

Long. 1½ lin. 1 exempl.

Ega. A well marked and elegant species.

TACHYS SQUIRESI, n. sp.—*T. fraterculo simillimus, differt thoracis basi utrinque nequaquam sinuato, etc. Oblongus, convexus, rufo-piceus, nitidus, palpis, antennis pedibusque flavo-testaceis; thorace valde transverso, postice modice recte angustato, angulis posticis haud productis, sub-obtusis, margine basali utrinque recto, medio paulo late lobato, basi supra inter striam dorsalem et angulum fovea profunda impresso; elytris striis utrinque tribus fortiter punctatis, alteris una vel duabus obsoletis.*

Long. 1 lin. 1 exempl.

Rio Janeiro. Taken by the late Mr. Squires.

TACHYS DROMIOIDES, n. sp.—*Oblongus, depressus, pallide testaceus, elytris fascia vaga mediana nigricanti; capite sulcis frontalibus brevissimis, thorace transverso, lateribus regulariter fortiter rotundatis et explanatis, juxta angulos posticos sub-rectis, margine basali medio lobato, ibique supra sulcato, juxta angulos late foveato: elytris oblongo-oratis, planis, lævibus, iridescentibus, utrinque setis paucis longissimis è punctis orientibus.*

Long. 1—1¼ lin. 7 exempl.

Santarem and Ega, Amazons. In form and colour this species resembles several other tropical American species, but it differs in the elytra being quite free from impressed striæ, and in other points. The setiferous punctures are peculiar in not being placed in the situation of the 3rd interstice, or in the 3rd stria; one only is on the disc, towards the sides, the others are sub-marginal or sub-apical. The impressed sub-marginal stria near the apex is obsolete, existing only as a short impression distinct from the apex.

Kentish Town: May, 1871.

ON CERTAIN BRITISH HEMIPTERA-HOMOPTERA.

(Revision of, and additions to, the *Aphrophoridae* and *Ulopidae*).

BY JOHN SCOTT.

(Concluded from page 243: *Ptyelus campestris*.)

Somewhat larger than *P. exclamationis*, from which species it can at once be distinguished by the two white spots, and with which it may be mixed up in collections, as I have already eliminated it in one or two instances.

My attention was first drawn to this insect by a specimen sent to me by Mr. Dale, and taken by him at Glanville's Wootton, in October last; and I have since recognised it in my own collection and that of Mr. Douglas. It has been taken by sweeping at Eltham, Leatherhead Common, and Southampton Common, in August and September.

Genus 2.—LEPYRONIA,* Am. et Serv.


Species 1.—LEPYRONIA COLEOPTRATA.


Cicada coleoptratra, L., S. N., v, 461, 23 (1767).

Cercopis angulata, Fab., Ent. Sys., iv, 53, 27 (1794); S. R., 97, 49 (1803); Panz., D. I., 103, 10; Fall., Hem. Suec., Cicad., ii, 13, 3 (1826).

Aphrophora coleoptrata, Germ. Mag., iv, 54, 11 (1821).*Ptyelus (Lepyronia) angulatus*, Flor, Rhyn. Liv., ii, 130, 1 (1861).

Brownish-yellow, pale fuscous-yellow or yellowish, clothed with very short, depressed, shining, yellow hairs.

Head brown: *crown* more or less broadly black down the middle, about three times as wide along the posterior margin as the breadth across the centre; anterior margin obtusely angulate, in the middle scarcely acuminate: front plate  shaped, black, with a narrow, brown, central line, entire margin narrowly black. *Face* black, very convex, with a faint, longitudinal, somewhat wide, channel, sides sulcate, the sulcations filled with very short, shining, pale yellow hairs. *Antennæ* black, apex of the 3rd joint, brown.

Thorax: *pronotum* brownish-yellow, in front, more or less brown, with a faint central channel, and on either side, a little way behind the convex anterior margin, two deep foveæ, the outer one elongated. *Scutellum* black, with a wide central keel. *Elytra*: anterior margin very convex when viewed from above, and projecting considerably beyond the contracted inner portion, which runs almost in a straight line and with nearly a perpendicular side from the base of, to in a line with the apex of, the clavus, each elytra with a broad, black,  shaped streak; the inner margin of the diagonal arm is in a line

* Not yet discovered in Britain.

with the basal angles of the scutellum, and joins the extremities of the straight one, which passes across a little below the apex of the clavus; marginal nerve, round the acute apex, piceous; inner nerves, next the apex, frequently reticulated with blackish or brownish. *Legs* black. *Coxæ*, 3rd pair, white or yellowish-white. *Tibiæ*, base of all the pairs, brownish-yellow; spines of the 3rd pair, yellow, tips black; fringe black. *Tarsi*, 3rd pair, 1st joint yellow, fringes, and remaining joints and claws, piceous.

Abdomen black.

Length, $2\frac{1}{2}$ lines.

A most remarkable insect, and at once recognisable by its 'dumpy' form, and the angular black character on the elytra. I have described it at length, because I have every belief in its yet being found in Scotland, if not in the North or South of England. It is spread over the whole of Europe, and even some portions of North America, and seems to frequent willow, birch, and other bushes, in damp grassy situations, and to occur throughout the whole summer, and as late as the end of October.


II.

Genus 3.—APHROPHORA, Germ.

Head: crown with a central keel; anterior margin obtuse angulate, scarcely acuminate, sides sometimes very slightly waved. *Face* convex. *Rostrum* 3 jointed, the 3rd joint longest, reaching to beyond the 1st pair of coxæ. *Ocelli* at least one and a-half times as far from the eyes as they are from each other.

Thorax: pronotum hexagonal, similar in shape to *Ptyelus*, and with a longitudinal middle keel. *Scutellum* short, generally depressed in the centre. *Elytra* longer than the abdomen.

Greyish-yellow, or fuscous-yellow, deeply and irregularly punctured throughout.

Head: crown short; along the posterior margin four times greater than across the centre, with a narrow  shaped plate in front, much wider than the ocelli, and margined with black; central keel pale yellow.

Thorax: pronotum, central keel pale yellow. *Scutellum* depressed in the centre, sides and apex unpunctured. *Elytra* dark greyish-yellow, punctures black, nerves prominent; next the anterior margin, two large yellowish-white patches, one, somewhat trapeziform, placed near the middle, the other, somewhat triangular, beyond the bifurcation of the 1st nerve, the inner branch of which it touches. ... 1. *a'ni*, L.

Yellow, deeply and irregularly punctured throughout.

Head: crown somewhat elongate, the width along the posterior margin $3\frac{1}{4}$ times greater than across the centre; sides slightly waved, apex rounded; front plate as in *alni*.

Thorax: pronotum, anterior margin slightly waved, apex acuminate.

Elytra yellow, with black punctures, and without spots or patches.

2. *salicis*, De G.

The above are the giants of the *Aphrophoridae*, and measure four lines in length. Of the two, *alni* is much the commoner. Both are widely distributed, and may be taken throughout the whole summer. Flor, in the Rhyn. Liv., ii, 137, 3, describes a third species, *A. coriacea*, Sahlb., said to occur on *Pinus abies*. It is smaller than either of the two other species, and is worth looking for.

We now approach the *Membracina*, or 4th Section (*Iassida Membracina*, Stål, Hem. Afr., iv, 83), in the first family of which, *Centrotidae*, we have two genera, each represented by a single species. These are *Centrotus cornutus*, L., known by its two lateral spines and one posterior spine, and *Gargara genistæ*, Fab., in which the lateral spines are wanting. Both are so well known as to need no further notice here. In the 2nd family, *Ulopidae*, we have again but one genus, *Ulopa*, which, until now, has only boasted of the commonest of the common among species, viz., *obtecta*, Fall. Not well adapted for leaping, the individuals of this species lie lazily all the summer at the roots of heath, &c., the heat being too great for them to go abroad; and in winter are heaped up in numbers amongst the flowers and seed-pods which have fallen to the ground and are collected in little masses at the roots, and these they so resemble, that, until the insects move, you can scarcely say which is which. As the genus *Ulopa* has but few representatives throughout the whole world, I consider the addition of the following species of more than ordinary interest.

Genus 1.—ULOPA, Fall.

Species 2.—ULOPA TRIVIA.

Ulopa trivia, Germ., F. Ins. Eur., fasc. iv, tab. 21 (1812); Mag., iv, 56, 4 (1821); Burm., Gen. Ins., tab. 3 (1838).

Pale yellowish-white. *Elytra* with three longitudinal black streaks.

Head: crown black, thickly and deeply punctured, with a broad yellow streak down the middle and a narrow one adjoining each eye; anterior margin elliptic.

Face black, with a yellow middle line. *Antennæ* yellow. *Eyes* pale brownish.

Thorax: pronotum yellowish-white, thickly and deeply punctured; within the anterior margin and on each side of the middle, a deep, transverse, black impression; posterior margin narrowly black on either side of the middle. *Scutellum* yellowish-white, punctured; before the middle a transverse channel, basal angles broadly piceous or black. *Elytra* pale yellowish-white, ocellate punctate; *clavus* with a black streak throughout its entire length, broad at the base and narrowing gradually until it reaches the apex: *corium*, 1st and 3rd longitudinal nerves black, the colour on the former extending for a little way upon the disc towards the anterior margin; marginal nerve round the apex, and sometimes a portion of two or more of the cell nerves, black. *Legs* pale yellow; *claws* brown.

Abdomen pale fuscous-brown.

Length 1 line.

Altogether a much smaller and handsomer insect than *obtecta*, from which it is at once to be recognised by its pale colour and the three longitudinal black streaks.

I have made the description from a ♂ example in the collection of J. C. Dale, Esq., who took it at Winfrith, near Lulworth, on August 16th, 1836, by "sweeping long coarse grass near furze bushes." Like *obtecta*, I expect that it is of very retired habits, and will be easiest found by searching at the roots of furze bushes, in similar places to that named above.

Lee, S.W.: March, 1871.

Note on Scydmaenus (Eumicrus) rufus, Müll. and Kunze, a species new to the British lists.—Mr. G. C. Champion has recently been fortunate enough to capture a single example of this most interesting species in rotten wood in Richmond Park. The clear rufous colour and peculiar facies of the insect at once attracted his observation; but his endeavours to obtain further specimens at the time, and my own in his company shortly afterwards, were not successful.

S. rufus is a trifle smaller than average *finetarius*, but cannot be satisfactorily likened to any recorded British species, on account of its entirely rufo-testaceous colour, very short oval elytra, and almost globose thorax. It is very shining, having scarcely any pubescence, no perceptible foveæ at the base of the thorax or elytra, and no punctuation except on the elytra, where it is sparse and slight. The legs are long, with the femora somewhat abruptly thickened towards the apex; and the hind pair seem to start almost from the apex of the body.

The allied *S. Hellwigii* (which is not unlikely to occur here, as it is found in France, Sweden, and Germany) is rather larger than *S. rufus*, with longer prothorax and elytra, and the head of its male deeply excavated behind.

These two form Thomson's genus *Cholerus*, distinguished by him from *Eumicrus* by its globose-ovate prothorax, which has no basal foveole, its non-foveolate elytra, and its simple tarsi in both sexes (the basal joint of the posterior pair being twice as long as the second). Associated with *Eumicrus*, they may be known from all

our other *Scydmaeni* by the apical joint of their maxillary palpi being scarcely visible, conic, and broad at the base (in fact, merged in the sub-apical joint), instead of slender and distinct.—E. C. RYE, 10, Lower Park Fields, Putney, S.W., April, 1871.

Note on a species of Corticaria new to the British lists.—Mr. Champion has also recently taken, under dry bark, in Richmond Park, an example of a *Corticaria* decidedly new to our list, and of which I have myself been so lucky as to find a pair in another part of the same Park, under similar conditions. As in the case of *S. rufus*, a visit to both localities by Mr. Champion and myself in company has failed to produce further specimens.

These insects are, of our recorded species, most nearly allied to *C. serrata*, from which they differ in their rather larger size, flatter and less oval build, larger antennal club, laterally less rounded thorax (of which the denticulations are finer behind, and the punctuation is not quite so close), and less evidently pubescent but more finely punctured elytra,—the interstitial rows and the striæ themselves being equally delicate, and so close that the surface seems very delicately transversely sub-strigose. These characters accord sufficiently well with those of *C. obscura*, Ch. Brisout (in Grenier's Cat. et Mat. 1863, p. 73); but that species (stated by its describer to be often confounded with *C. serrata*) should be pitchy-black, with the elytra rather lighter towards the apex, so that it is darker than *serrata*, whereas these Richmond insects are of the same ferruginous-red as light *serrata*. Seeing, however, how much that species varies in colour, some latitude may be allowed to *C. obscura*. Unfortunately, the present state of affairs in Paris prevents me from obtaining M. Brisout's opinion on this point. I find no description at all according with my insect in Mannerheim's monograph.—ID.

Note on Cryptophagus Waterhousei, Rye.—I have little, if any, doubt that the Swedish insect referred to by Thomson in Skand. Col., v, p. 257, as a monstrosity of *Cryptophagus acutangulus*, in which the thoracic anterior callosities were on both sides confluent with the lateral denticle, should be referred to the species shortly afterwards described by myself (E. M. M., vol. iii, 1866, p. 101) under the above name. It is in the highest degree improbable that so outrageous (and in both cases *equilateral*) a development should accidentally occur in two instances; and I may observe, that, out of a very large number of *Cryptophagi* examined by me, including, of course, very many *acutangulus*, I have never seen such a peculiarity as that referred to by Thomson in any one instance, even on one side of the thorax. Compared more strictly with *C. acutangulus*, to which it is undoubtedly very closely allied, *C. Waterhousei* (apart from the vast difference of the thoracic callosities) has the sides of the thorax much more contracted from the front towards the base; and, even admitting the possibility of an *equilateral* amalgamation of the anterior and lateral teeth, the very *lowest* part of what would in that case be the lateral denticle is still very much *above* the normal position of the *highest* part of the lateral denticle of *acutangulus*. The punctuation of the thorax, moreover, is still closer, and of the elytra more delicate than in the latter; the elytra themselves being somewhat shorter and more abruptly rounded at the apex. It would be interesting to know if these peculiarities exist also in Thomson's insect above mentioned.

I am the more inclined to draw attention to *C. Waterhousei*, as I believe it has been considered to be an ultra-European and introduced species, on account of its having been taken in one of the corridors of the Crystal Palace at Sydenham. Personally, I am convinced of its truly British origin, having often collected in those corridors, which are mere empty passages at some considerable distance from the main building, and on the alternately open windows of which myriads of our commonest *Cryptophagi*, *Latridii*, &c., may, with occasionally better undoubted (never accompanied, so far as my experience goes, by any dubious) British species, be observed in fine spring weather.—ID.

Capture in Northumberland of a species of Aleochara new to the British list.—Some time ago, a specimen of an *Aleochara* was taken here, which Dr. Sharp referred rather doubtfully to *A. villosa*, Mann., and on one of the warm days of last month my brother found a second example on our stable-‘midden’; this accords so well, in the majority of its characters, with the description by Kraatz (Ins. Deutsch., ii, 94) of that species, that I think *A. villosa* may be added, with a very small reserve of doubt, to our list of native insects.

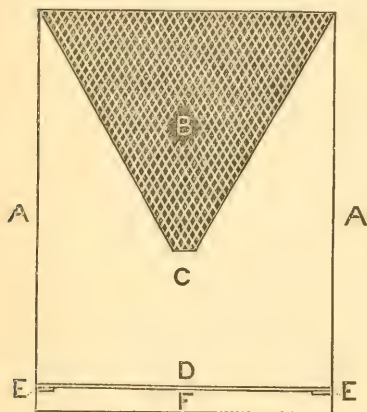
As described, it somewhat resembles *A. lanuginosa*, from which it differs in having the antennæ longer and thinner, the 2nd and 3rd joints being equal in length, and the 4th joint longer than broad; in being flatter, more parallel, much less shining, with the thorax proportionately narrower, and the elytra (which are distinctly and thickly punctured) not so distinctly sinuate at the outer angles. The chief doubt as to the correct identification of this insect seems to arise from the punctuation of the upper surface of its abdomen; that portion of *A. villosa* being described by Kraatz as having its anterior segments sparingly and finely punctured, with the apex almost entirely impunctate; whereas in my insects the anterior segments are apparently only more delicately punctured than in *lanuginosa*, and the apical segment is very evidently and tolerably closely punctured.

The whole insect much resembles *A. grisea*, Ktz., in size, build, dullness, and facies.—THOS. JNO. BOLD, Long Benton, Newcastle-on-Tyne, April 8th, 1871.

Capture of Hydnobius Perrisii near Gateshead-on-Tyne.—In our Museum collection of *Coleoptera* I find an example of the very rare *Hydnobius Perrisii*, Fairm., which was taken at Saltwell, near Gateshead, by the Rev. R. Kirwood.—ID.

Capture of Pissodes piniphilus at Sunderland.—The same collection contains two specimens of *Pissodes piniphilus*, Herbst., which were taken by the above gentleman at Sunderland; having probably been imported in timber-laden ships from the north of Europe. It would be as well, however, if some of our Scottish friends would keep a sharp look out for this species, as it may easily be passed over as small *notatus*, from which it may, however, be known at once by the first fascia of its elytra being obsolete, and the second nearer the middle than in that species, whilst in the thorax the punctures are wider apart, and not confluent.—ID.

A new Moth-trap, without the aid of light.—Being in the country some years since, I happened to see some bottles, containing beer and sugar, hung up against fruit-trees to catch wasps. Having obtained the gardener's permission to break one, in order to see if it contained any moths, I found several, including some species not in my collection, but all spoiled through being saturated with the mixture. Some time after, it occurred to me that the trap of which a diagram is given would be useful for catching moths without spoiling them.



A.A: a round tin box open at the top, but closed at the bottom; having a diameter of 6 inches, and being 10 inches long. B: a cone made of perforated zinc, about 6 inches long, fitting closely to the sides of the tin box at the top, and terminating in a point, C, where there is a hole one inch in diameter. D: another piece of perforated zinc fitting exactly against the sides, and resting on four small pieces of tin (E. E.), to prevent it from falling to the bottom. F: a piece of flannel, saturated with sugar and rum.

If this be placed in any open place at dusk, I am quite satisfied the entomologist will find it repay him. I shall be happy to procure one for any gentleman who may require it. I should think the expense of making could not exceed four shillings.—C. A. SHAW, 7, Bloomfield Terrace, Harrow Road, W., April, 1871.

On the hibernation of tree-feeding Lepidopterous larvæ.—Several of my correspondents have mentioned to me the difficulty they experience in rearing hybernating larvæ of the tree-feeding species, more especially of those which feed on oak.

Usually, these larvæ appear to do pretty well until about the beginning of March, they then begin to wander about, apparently in search of food, and as it is usually difficult to obtain food for them so early in the season, they very soon shrivel and die.

Now, from my own experience, I have arrived at the conclusion that tree-feeding larvæ begin to feed very early in the year—probably as early as the middle of February, if the weather be mild—and that they manage to live and thrive upon the buds and tender bark of their respective food plants long before the young leaves begin to expand.

I have at the present time a number of *B. roboraria* larvæ feeding in this way, some of which, confined in a muslin sleeve on a growing tree have done very well, while others that I kept until very recently in a breeding cage upon the twigs upon which they hybernated, were beginning to decrease in number rapidly until I supplied them with fresh twigs, upon which they are now operating to their manifest advantage. I have often wondered why larvæ that are so small at the time of their hibernation should be so large as soon as the buds begin to burst, and this appears to settle the difficulty.

Very possibly I may be here reiterating what to many people is a well ascertained fact; but, as I have reason to believe that some—even of our best—entomologists labour under the impression that larvæ which feed on leaves in the autumn wait until the leaves expand before they re-commence feeding in the spring, perhaps the publication of these remarks may help to dissipate their delusion.—W. H. HARWOOD, Colchester, *April, 1871.*

Lepidoptera at Guestling in 1870.—The first part of the season was by far the worst I have had since I began to collect in 1865; the only insect worthy of note being *Platypteryx lucertula*, April 20th, which seems very early for this species. June 22nd, *Platytes cerassellus*; abundant in grassy places among the shingle at Pett. June 28th, *Cidaria picata* (rather common this year). June 29th, *Phibalapteryx tersata* and *Miana arcuosa*; one of each at light. July 6th, *Rhodophaa tumidella*; pretty common at sugar, but not very easy to capture. July 7th, *Heliothis marginata*; one at sugar. July 8th, *Cryptoblabes bistrigella* and *Phycis carbonariella*, one of each at light, also one of the former by mothing: *Ephestia elutella*, one, I think, at light: *Rhodophaa advenella*, pretty common; with *R. consociella*, at sugar, and also came to light. These two species and *R. tumidella* were very welcome among the swarms of common things which then came to sugar. July 16th, *Hyphenodes albistrigalis*; several came to sugar about this time. July 18th, *Acidalia inornata*; as it imbibed the sugar it looked very different from *A. aversata*, for which it is, however, I fancy, often passed over. August 15th, *Tethea retusa*, by mothing; *Apamea fibrosa*, one specimen at the millpond; where also I took, September 1st, *Nonagria lutosa*.

In the above notes the date given is that on which the species was first observed.

I am sorry to say that the insect I recorded as *Boarmia roboraria* in Ent. Mo. Mag. for December, 1868 (No. 55, page 178), is only *B. consortaria*.—E. N. BLOOMFIELD, Guestling Rectory, *April, 1871.*

Spring Lepidoptera at Leominster.—This season seems likely to be a good one for insects. In this neighbourhood, spring moths have been more than usually common, if I may judge from the success I have had on the few nights I have been able to frequent the Sallow bloom. On Wednesday, March 22nd, I had once more the pleasure of taking all the species of the genus *Teniocampa*. As usual here, *opima* was only represented by a single example, but the other kinds afforded excellent sport. Hybernated *X. semibrunnea* and *petrificata*, and *H. croceago* were also taken, giving promise, I hope, of ova. To-day, a lovely specimen of *D. salicella* was captured on the wing.

In the breeding cages, *C. ridens*, *E. coronata*, and *B. notha* were out as early as the 19th of this month, *C. suffumata* on the 20th, *A. pictaria* on the 21st, *E. albipuncta*, *E. versicolora*, and *N. trepida* on the 26th.—THOS. HUTCHINSON, Leominster, *March 31st, 1871.*

Capture of Noctua sobrina.—I omitted last August to send you a report of the capture at Rannoch of four *N. sobrina* at sugar by my brother and myself.—ID.

Stray notes on the Fen Lepidoptera.—Although the draining of fen land, which has been so extensively carried out in the Eastern counties, has doubtless greatly restricted the range of the fen loving insects, many of them still linger in the small swampy nooks and corners to be found here and there along the course of

the rivers Yare, Bure, Waveney, &c., and are not exclusively confined to the large fens, such as Ranworth and Horning, so that I think there is little fear that they will be entirely exterminated.

For instance, last June, in some marshy meadows on the borders of Suffolk, *Phibalapteryx lignata*, *Tortrix costana*, and even *Glyphipteryx cladiella* were quite common; and, at a gas-lamp a short distance away, I had the good fortune to secure a specimen of *Meliana flammea*.

About the same time a young friend found, in a little fen a few miles down the Yare, *Papilio Machaon*, commonly, and also *Spilosoma urticae* and *Hydrelia unca*. Later in the summer I went with him to the same spot, and although insects were very scarce, or loth to turn out, we managed to secure *Nudaria senex*, *Collix sparsata*, *Nonagria despecta*, *Peronea aspersana*, *Laverna propinqua*, *Elachista paludum*, and *Opotegea crepusculella*.

In other small strips of marsh along the river side, I have met with *Phibalapteryx lignata* (two broods) in June and August, *Acilalia immutata* and *emarginata* commonly, larvæ of *Cidaria sagittata* feeding on seeds of *Thalictrum flavum*,* *Leucania straminea* on the reeds, *Apamea unanimitis* flying in the evening, *A. ophiogramma* on blossom of *Scrophularia aquatica*, *A. fibrosa* and *Orthosia suspecta* at sugar, and *Plusia festucae* flying at sunset round blossoms of *Lythrum salicaria*, *Mentha hirsuta* and *Stachys palustris*, in company with an occasional *Dianthæcia cucubali*. One specimen of this last also paid me the rare compliment, one windy night, of settling on and greedily sucking my sugar. In the absence of *Silene*, the larvæ feed in the capsules of *Lychnis flos-cuculi*, also freely eating the leaves.

Pionea stramentalis was rather common among the tall herbage, and *Schænobius forficellus* (very variable) among the sedges and flags by the ditch sides, where also *S. mucronellus* and *Chilo phragmitellus* occurred, and *Orthotania sparganella* among *Sparganium ramosum*. In September and the beginning of October, when *Nonagria fulva* was flying in abundance at dusk, I met with several specimens of *Pterophorus isodactylus* flying over the reeds and tall herbage, and at the same time a second brood of the common *Epione apiciaria* made its appearance. These fenny localities seem favourable to second broods. *Elachista cerusella* was very common among reeds in both June and August, and its mines in the leaves in July. *E. Kilmunella* abounded among *Carex* in September, *Eudorea pallida* was, of course, common all the summer, and *Peronea aspersana* and *Shepherdiana* by no means scarce among *Spiræa ulmaria*, while *Phlæodes immundana* swarmed among alders.

A curious circumstance connected with the reeds deserves especial notice. One tall reed-bed, occupying a wide ditch or drain, was so attractive to insects that by sweeping it with the net at dusk I sometimes secured more insects than I could capture in the whole evening otherwise. Besides the *Leucaniæ*—*straminea*, *impura* and *pallens*—and the *Phryganidæ*, which were evidently at home—*Agrotis nigricans* and *tritici*, *Noctua plecta*, *rubi* and *umbrosa*, *Miana furuncula*, *Apamea fibrosa* and *oculea*, *Tethea subtusa*, *Gonoptera libatrix*, *Epione apiciaria*, *Zerene rubiginata*, *Pelurga comitata*, *Cabera pusaria*, *Eupithecia minutata*, *Ebulea sambucalis*, *Eudorea cembra*, and *Tortrix heparana*—a most heterogeneous lot, where all to be

* These larvæ being, I suppose, on their natural food-plant, were content to feed exclusively on the seeds. I was unable, by the most careful examination, to find any evidence of their having eaten the leaves, or gnawed the stems so as to wither them.—C. B.

found sitting on the reed leaves, and many of them in plenty, while *Dianthæcia cucubali* was several times caught flying over. What the attraction might be, I am unable to guess. Certainly it was not honey-dew, or food of any kind; the leaves were clean, and the moths were not looking for food. Apparently the reed-bed was a comfortable lounge, and they were enjoying themselves.—CHARLES G. BARRETT, Norwich, 16th March, 1871.

Natural History of Campptogramma fluviata.—In the autumn of 1858, *Intelligencer*, vol. iv, p. 188, I published my first observations on this species, having then lately reared it from the egg, and proved that the difference between the light and dark forms of the imago was merely sexual. Since then I have reared many more broods from the egg, and have largely supplemented my early record of the various stages, until it seemed that the additional information thus collected might justify another and longer note.

A more easy species to rear in confinement I do not know; it seems quite tame and domestic; only let the temperature be warm enough, the larva feeds quietly and rapidly on food that grows everywhere; it spins up contentedly; ninety-nine pupæ out of every hundred produce perfect imagos, and these last again make no difficulty about pairing and continuing their race. In fact, cold alone, and no mysterious instinct as to certain seasons in the year, puts a limit to the number of broods in any given number of months. Indoors, if the food can be supplied, perhaps six or seven broods might be reared in a year; in 1862, I had a ♀ captured on May 22nd, and 152 days after, on October 21st, without forcing, I bred its great grand children, and then did not care to carry the strain further. Outdoors, of course, the character of the season would influence the number of broods, but in favourable times, with an early summer and mild winter, I feel sure there might be five broods: and in this I am supported by the published notices of captures made from May to January,* both months inclusive. In colder seasons there might be no more than three, or even two broods, every stage being greatly delayed by absence of warmth. Thus I have one brood recorded which went through the whole cycle of transformations in 29 days during a hot August, and another in a colder time which took 62 days; whilst the brood which hibernates in the pupa must, of course, take to its share a much longer period, from October or November till next May or June.

The larva, when at large, is no doubt polyphagous, and I know it has been found or reared on *Senecio vulgaris*, *Polygonum persicaria*, and *Agrimonia eupatoria*; like other geometers that feed on low plants, it is quiet and sluggish in its movements.

In this neighbourhood, with the exception of one specimen beaten out of a hedge near a salt-marsh, and a few others taken at ivy-flowers, the great majority of our captures of the imago have been made at the street gas-lamps.

The egg presents no striking peculiarity; it is bluntly oval in outline, flattened; the shell glistening, and faintly covered with very shallow and irregular reticulation; in colour very pale yellow, or greenish-yellow, turning smoky just before the exit of the larva.

* Mr. H. Rogers records the capture of a female at sugar, on January 1st, 1858. *Intelligencer*, vol. vii, p. 52.

The larva is subject to a great range of variation in colour, but there is one variety which certainly outnumbers the rest, and may fairly be taken for the type; the description of the figure suits all varieties.

The length, when full-grown, about three-quarters of an inch, the figure proportionately stout for an ordinary geometer, tapering towards the head, cylindrical behind and slightly flattened forward; head smaller than second segment, with its lobes well defined. The ground colour greenish-grey, the head striped with the commencement of the dorsal and sub-dorsal lines; the dorsal line dusky and slender, dividing the lobes of the head, and running thence continuously to the commencement of fifth segment; the sub-dorsal stripe begins also on the head, and is rather paler than the ground, but edged on either side with a fine dusky line; on the folds between segments 5—10 are five diamond-shaped marks, whitish, but bordered with dusky or blackish outlines, and with the dorsal line appearing in the centre of each as an elongated black spot; the centre of the back, after the middle of segment 10, becomes much paler, with faint blackish *Λ*s instead of diamonds, and the sub-dorsal lines grow indistinct; just above the spiracles is a dark line, continuous on segments 2—5, and 10—13, but showing only as five black dashes at the intermediate folds; the spiracles small and obscure, but ringed with black, and placed on ground slightly paler than the rest of the body; the tubercular dots are whitish-grey, the segmental folds show slightly reddish; the belly is pinkish-grey, paler down the middle, and with a central and two sub-spiracular fine dusky lines; the ventral legs have a dark streak, and the anal legs a light streak down them.

Some varieties have the markings as above, but the ground colour all over pinkish-grey; others have a grey ground, without any green or pink tinting in it.

There is a very decided variety of a light yellowish-green colour, without much noticeable marking, though it is generally possible to trace the dorsal and sub-dorsal lines faintly, whilst the row of dark dashes above the spiracles show firm and distinct, being apparently the last to change or disappear of all the markings.

In some broods occur varieties, having the greenish-grey ground colour, and the usual markings on the front and hind segments, but with the first half of the back of each diamond-bearing segment coloured soft, dull pink, so that from above the larva looks to be banded with green and pink; the diamonds pinkish-white; the belly greenish.

There is another variety with a purplish bloom laid over a dull green.

Another has the greenish-grey ground, but with all the markings, diamonds, and lines, scarcely showing except just at the folds, where the dusky lines that form them turn red.

Another has the ground on the back of a dull pinkish-brown, all the lines showing light red at the folds. Another again has the ground pale brown, the diamonds bordered by darker brown tinged with olive, the edgings of the sub-dorsal stripe distinct and wavy, and bearing some small black dashes on its under-side at the end of each segment; the black dashes above the spiracles very distinct; the spiracles themselves black.

As in the greenish varieties sometimes, so also with the brown ones, there are individuals which show a purplish bloom.

In some of the paler greenish and ochreous varieties, the back of the hinder segments bears, instead of *Λ*s, some pairs of indistinct freckled lines, arranged almost in the form of stunted crosses.





THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE:

CONDUCTED BY

H. G. KNAGGS, M.D., F.L.S.

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VOL. VIII.

"Nature's bequest gives nothing, but doth lend."

Shakespeare.

248871

LONDON:

JOHN VAN VOORST, 1, PATERNOSTER ROW.

1871-72.

LONDON:

PRINTED BY A. NAPIER, SEYMOUR STREET, EUSTON SQUARE, N.W.

	PAGE
Carabidæ (and Cicindelidæ), Notes on ...	11, 29, 54, 77, 102, 129, 148, 176, 199, 237, 263, 285
Cecidomyia forming galls on <i>Pteris aquilina</i> ...	99
Ceuthorhynchideus <i>Chevrolatii</i> , Note on ...	205
Chloëphora <i>prasinana</i> , Sound produced by ...	138
Chrysomela <i>distinguenda</i> , Note on ...	15
Cicindelidæ, Notes on some Chilian, with description of a new species ...	76
Cidaria <i>suffumata</i> , Variety of ...	39
Clythra 4-punctata, Note on the larva-cases, &c., of ...	269
Coleoptera, Addition of six species and two genera to the British List of ...	73
" at Studley, near Ripon, Captures of ...	38
" Catalogue of British, Notes on Dr. Sharp's ...	83
" found in and about a bird's-nest ...	15, 64
" in Buddon Wood, Leicestershire ...	85
" in the Manchester district during the past winter ...	289
" Notes on captures of ...	84
" " " recent captures of ...	270
'Communis error facit jus,' On the application of the maxim, to scientific nomenclature	1
Composchilus <i>palpalis</i> , Er., a genus and species of Oxytelidæ new to our List, Occurrence of ...	37
Corsican insects (with descriptions of new genera and species of Hemiptera), Notes on some ...	191, 243
Cossus <i>ligniperda</i> , Note on the economy of ...	70
Crambus <i>alpinellus</i> , Hübner, a species new to Britain, Note on ...	110
" <i>myellus</i> at Braemar ...	70
Cryptophagus, Addition of two species of, to the British List ...	159
" <i>grandis</i> , Note on ...	179
" <i>Waterhousei</i> , Note on ...	179
Cydnus, Note on the genus ...	161
Danaïs <i>Archippus</i> , Occurrence of, in Queensland ...	17
Dasydia <i>obfuscata</i> , Natural History of ...	20
Deilephila <i>euphorbiæ</i> , Occurrence of, near Southampton ...	166
" <i>galii</i> , &c., Larvæ of, at Brighton ...	112
Deiopeia <i>pulchella</i> , at Bournemouth ...	111
" " <i>Erith</i> ...	111
" " near Brighton ...	111
" " Bristol ...	111
" " Manchester ...	111
Delcater <i>dichrous</i> , Note on a variety of ...	15
Dendrophagus <i>crenatus</i> , Payk., Contribution to a life-history of ...	196
Depressaria <i>Douglasella</i> bred ...	114
" <i>Weirella</i> bred in plenty ...	114
Dipterous pupæ in gall-like nidi on fronds of <i>Athyrium filix-femina</i> ...	181
Disappearance of particular species of insects, Instances of the sudden and unaccountable ...	205, 274
Dorcatoma <i>bovistæ</i> , Ent. H., Notes on the habits of ...	180
Eidophasia <i>Messingiella</i> bred ...	71
Embryonic larvæ of Butterflies, On the ...	122
Empis allied to <i>E. stercorea</i> , Linn., On the species of ...	281
Entomological Society, Haggerstone, Proceedings of the ...	227
" " of London, " " ...	71, 168, 189, 227, 256, 279, 295
" " Newcastle-on-Tyne ...	295

	PAGE
<i>Ephyra punctaria</i> , Description of the larva of	183
<i>Eremobia ochroleuca</i> , Description of the larva of... .. .	21
<i>Eristalix tenax</i> attracted by painted flowers	273
<i>Euperia fulvago</i> , Occurrence of an extraordinary variety of, near London	187
<i>Eupithecia irriguata</i> at Exeter	69
" <i>subciliata</i> , On the habits of	290
Falkland Islands, Notes on a Trichopterous insect (<i>Linnophilus</i>) from the	273
<i>Fulgora</i> , Luminosity of (extract from Perry's 'Arcana')	167
Generic and specific names, Upon the relations between	254, 274, 290, 291
<i>Geotrupes stercorarius</i> , Linn., Note on	107
" <i>vernalis</i> and its allies... .. .	8
<i>Gymnancycla canella</i> , Natural History of	163
<i>Halias quercana</i> , Sound produced by	70
<i>Heliothis armigera</i> and other Lepidoptera at Sidmouth, Capture of	166
" " near Exeter	138
Hemiptera, Captures of, at Bournemouth, &c.	136
<i>Homalium rugulipenne</i> , Rye, Note of the occurrence of, on the Welsh Coast	204
<i>Homalota atrata</i> , a species new to the British Lists, Note on the occurrence of, near London	247
" Note on three new British species of	247
<i>Hybernia aurantiaria</i> , Natural History of	90
Hybridism, Note affecting the question of	66
Hybrids in Coleoptera, Note on the question of	135
<i>Hydnobius spinipes</i> , Gyll., Note on the occurrence in England of	204
<i>Hydroporus obsoletus</i> , Aubé, Note on a deformity in the antenna of	288
<i>Hylastes hederæ</i> , Schmidt, Occurrence in Britain of	107
<i>Hypera polygoni</i> , Note on the earlier stages of	205
<i>Incurvaria canariella</i> , Note on	210
Instinct of Bees ever at fault? Is the	93, 110
Larvæ, Abundance of, at Sheerness... .. .	18
Lepidoptera, Captures of, at Glanville's Wootton	139
" " " " Guestling, in 1871	188
" " " " Rannoch	113
" " " " in Morayshire	210
" " " " Sherwood Forest	88
" " " " the New Forest	139
" " " " near Battle, Sussex	211
" " " " Lewes	250
" " " " Sheerness	184
" from the neighbourhood of Norwich, Note on	271
" of Ireland, Additions to the	6
" " South Wales, Notes on the	113
" " the South-west of Scotland, Notes upon the	66
" Manx, Additions to the list of	211
<i>Leucania albipuncta</i> near Exeter	111
" <i>straminea</i> , Natural History of	248
<i>Libellula</i> (<i>Sympetrum</i>) <i>flaveola</i> , Linné, Note on the oviposition of... .. .	127
<i>Linnophilus</i> from the Falkland Islands, Note on a	273
<i>Liparis salicis</i> , Notes on the habits of	206
Lithosiidæ, Notes on the earlier stages of some species of	169
Macro-Lepidoptera observed in N. W. Morocco in 1870-71, List of... .. .	228

	PAGE
Meligethes from Britain, Description of a new species of	74
„ Notes on British species of, and additions of one new species to our List	267
„ pictus, Rye, Note on	288
Melitea Athalia, Natural History of	258
Meloë cyaneus, Muls., Note on the occurrence in Great Britain of	248
„ Notes on	288
Metatropis rufescens, Notes on the metamorphosis of	136
Migration in Insects, On involuntary	97
Mimicry, Notes on	251
Monotoma 4-dentata, Thoms., Note on	160
Moth-trap, Success of the American	117
Mycetobia pallipes, Meigen, On the habits of the larva of	92
Myrmecomorphus rufescens, Westw.	65
Nitidula flexuosa, Note on the capture of	248
Noctua sobrina and other Lepidoptera, at Rannoch, Capture of	112
„ umbrosa, Natural History of	142
Nomenclature, Entomological 43, 71 [see also 1, 40, 41, 93, 96, 142, 167, 253, 254, 274, 290, 291]	
„ „ Some considerations on Mr. Lewis's views concerning... ..	40
„ Notes on	142
Nonsense-names and Anagrams in Scientific Nomenclature	253
Nyssia lapponaria, Boisd.	16
Odonata occurring near Epping, List of	86
Odontæus mobilicornis at Cirencester, Capture of	38
Oxytelus allied to O. depressus, Notes on some recently described species of	37
Pempelia albariella, Note on	271
„ new to Britain, Occurrence of a	162, 163
Pentatoma juniperina, Lin., &c., Capture of	289
Perry's 'Arcana,' Nomenclature of Rhopalocera as affected by the names given in	167
Pezomachus trux, Först., and P. fasciatus, Fab., ♂, On	180
„ „ „ Discovery of the male of	162
Phacopteryx brevipennis at Ranworth Fen	137
Phibalapteryx lapidata, Natural History of	165
„ lignata, Natural History of	18
„ „ Note on	166
Phoxopteryx, Description of a new species of, from Great Britain	134
Pieris Daplidice at Dover	166
„ „ „ Folkestone	137
„ „ near Brighton	111
Platydema violacea, Fab., Note of a recent capture of	248
Platyptilus, Note on a probably new species of	137
Plectrocnemia, The species of the Trichopterous genus	143
Pogonus littoralis, Note on	269
Prionoculus, Description of a new species of Coleoptera belonging to the genus, with notes on the other species	260
Priority, Law of, versus Accord... ..	93
Psocidæ injurious to Tea	161
Pterophoridæ, Notes on the economy of some British species of	153
Quedius brevicornis, a species new to the British List, Note on	14
„ fulgidus, Note on red	161
Rhodophæa narmorea bred	71

	v.
	PAGE
Rutelidæ, Description of a new species of	5
Scoparia new to science, Description of a British species of	169
Sericoris from Britain, Description of a new species of	216
Sesia chrysidiformis, Notes on	88
Sphinx convolvuli at South Shields... ..	111
„ „ near Exeter	111
Sialis fuliginosa at Braemar	65
„ „ in the Lake District	39
Swiss Butterflies, Corrections to Mr. Murray's List of	38
Syncalyptra, Description of a new species of, from Great Britain	151
Synonymy, On the rules and use of... ..	41
Systematic Zoology and Nomenclature... ..	96
Tachyporus nitidicollis in a midland county	289
Tæniocampa gothicina, H.-S., in Morayshire	39
„ leucographa, &c., near York	17
Tapinostola elymi, Description of the larva of... ..	63
Temperature upon the development of butterflies, Query as to the effect of	290
Tephrosia crepuscularia, Description of the larva of	208
Tettix Schrankii, Fieb., an Orthopteron new to the British List	16
Throscus carinifrons, Bonv., Occurrence in Britain of	135
Tinea pallescentella bred from a dead cat at South Shields	209
Tineina feeding upon fungi, Notes on species of	250
Tortricidæ, Notes on British	272
Tortricina and Tineina collected in N. W. Morocco by Mr. Tovey Blackmore in 1870-71, List of... ..	232
Trichonyx sulcicollis, Reichenb., Capture of, at York	135
Trichopterygia, New British, with diagnoses of new species	151
Triphæna orbona, Notes on the variation of	273
Thyamis agilis, Rye, Addition to the description of	160
Vanessa Antiopa near Norwich	110
„ urticae and polychloros, Observations on the eggs of, with regard to Sepp's figures	49
War and Entomology	65
Weevil-galls on Linaria vulgaris	108
Wesmaëlia cremasta, a new Braconid from Great Britain and Spain, Description of	257
Xylina furcifera (conformis), Natural History of	114
Zelleria saxifragæ, Staint., a species new to the British List, Capture in Scotland of	271
Zygæna new to the British Lists, Capture of a	68

INDEX OF SUBJECTS NOTICED IN THE PROCEEDINGS OF THE ENTOMOLOGICAL SOCIETY OF LONDON.

	PAGE
Acaridæ, New species of British	256, 280
Acentropus, External sexual apparatus of	296
„ Notes on the genus	280
Acronycta leporina (bradyporina), Dimorphic example of	295
Acydium peregrinum, Abundance of, at Tangiers	72
Agrotis comes, Variety of	190
Anaspis maculata, Habits of	296

	PAGE
Anniversary Meeting	256
Ants storing grain	227, 279
Aphides attacked by Hymenopterous parasites	256
Aplecta occulta captured on the Atlantic	168
Argynnis Aglaia, Variety of	190
Bombyx mori, Double cocoon of	279
„ Pernyi, Method employed by the Chinese in rearing	44
Botrys fuscalis with part of puparium adhering to the head	72
Cantharis, New species of	72
Carabi of Western Europe and Siberia	280
Cassididae, New species of exotic	280
Catocala fraxini from the Regent's Park	168
Chlanius sericeus from Ireland	71
Chromo-photography applied to representations of insects	43
Cicindelidae, New species of	72
Coccus of orange infested by a parasite	296
Coleoptera from the diamond fields of South Africa	190
Cynips radialis, Gall of	296
„ sexual organs of	296
Dragon-flies, Liability of, to attacks of birds	190, 227
„ „ Mimetic resemblances in	190
Dyes, Effects of, upon Lepidoptera	44
Elephant, Tusk of, with eggs of an insect (?)	43
Emus hirtus from the New Forest	72
Entomological Society in London in 1780, Minute-book of	71
Eurygnathus parallelus and E. Latreillii, Notes on	168
Fighting beetles, Jar used by the Chinese to confine... ..	44
Fleas, Notes on	296
Formica herculeana occurring in the crop of Picus Martius said to have been shot near Oxford	168, 189
Gall-making saw-flies avoiding portions of trees overhanging water	279
Gall of Diastrophus rubi on Pteris aquilina	44
Gonopteryx rhamni, Extraordinary variety of	43
Hornet, Identity of the European, Siberian, and American species	295
Hymenoptera, Rare species of British	44
Larvæ, Preserved	168
Lasiocampa trifolii, Pale form of, from Romney Marsh	190
Lepidoptera from Costa Rica	256
„ „ Shanghai, New species of... ..	44
„ Varieties and malformations of British	190
Libellula flaveola, Eggs of	168
Lithosia caniola at Romney Marsh	190
Locusts, Ravages of, in South Australia	296
Longicorn Beetles from South Africa	44
Lucanidae, New species of exotic	44, 256
Micro-Lepidoptera from New Granada, Mines of	43
Myriopod destroying strawberries	72
Myrmeleon, The Linnæan species of	190, 227
Nyssia lapponaria	43
Odonates, Aperçu statistique sur les	72
Papilionidae, New species of exotic	72

	PAGE
Papilio Thersander, Notes on	190
Pericopides, Species of	227, 296
Phycita, New species of, from Gravesend	280
Phytophaga, New species of Australian	44
Phytoptus, Galls of, on birch... ..	44
„ on Cinnamomum	280
„ vitis, Galls of	72
Prosopistoma asserted to be founded upon larvæ of Ephemeridæ	227, 279
Psila rosæ injurious to carrots	72
Pyrochroa flabellata, Larva of	72
Rumia cratægata, Variety of	44
Seydmænus rufus, British example of	43
Serropalpus striatus, Notes on	296
Showers of Insects (?) at Bath	44
Strepsiptera, Monograph of	72
Synonymy of Lepidoptera	44, 190, 280
Thrips destructive to peas	190
Throscus carinifrons, British specimens of	168
Tiphia tarda, Cocoons of	190
Triphæna orbona, Varieties of	168
Zygæna exulans from Braemar	168
„ trifolii, On the forms of	168

SPECIAL INDEX.

(FOR SPECIES NEW TO SCIENCE OR ADDED TO THE BRITISH LISTS, AND FOR
LARVÆ DESCRIBED, VIDE POST.)

COLEOPTERA.

	PAGE		PAGE
Acidota cruentata	289	Bruchus canus	84
Actidium concolor, in Yorkshire....	38	Bryoporus rugipennis	74, 97
Agabus Solieri	186	Ceuthorhynchideus Chevrolatii	265
Agathidium convexum	289	troglodytes, <i>in</i>	
Aleochara ruficornis	38	cop. with Cœliodes	
villosa, at Braemar	74	didymus	66
Amara alpina, „ „	74	Ceuthorhynchus tarsalis, in quantity.	84
Quenseli, „ „	74, 186	urticæ.....	84
Anchoderus submaculatus, Mots....	56	Chalybe, Casteln.	79
Anchomenus dimidiaticornis, Dej. ..	150	inæqualis	80
elegans, Dej.	150	Leprieurii.....	80
Anchonoderus.....	33	Choleva colonoides, in Yorkshire....	15
Atemeles paradoxus, at Folkestone..	84	spadicea	289
Athoüs rhombeus	85	Cicindela chilensis.....	76
Atomaria diluta	38	compressicornis.....	287
finetarii, at York	160	peruviana	77
„ , food of	205	Cis punctulatus	74
Baridius scolopaceus	85	Clythra 4-punctata, larva case of....	269
Batrissus venustus, in Yorkshire	15	Colydium elongatum.....	85
Brachonyx indigena	74	Crepidodera ferruginea, <i>in cop.</i> with	
		C. rufipes; also with C. transversa	135

	PAGE		PAGE
<i>Cryptophagus grandis</i> , = <i>populi</i> , Payk.	179	<i>Meligethes coracinus</i>	267
<i>Waterhousei</i> , = <i>acutangulus</i> , Gyll., monstr.	179	<i>corvinus</i>	267
<i>Dasytes niger</i>	84, 85	, Notes on British	267
<i>Deleaster dichrois</i> , var. <i>adustus</i>	15	<i>obscurus</i> (<i>distinctus</i> , W.C.)	269
<i>Dendrophagus crenatus</i>	74	<i>ovatus</i> , St. (<i>maurus</i> , W.C.)	267
, "Life history"	196	<i>symphyti</i> in Yorkshire ..	38
<i>Diploharpus</i> , Chaud.	178	<i>Monotoma 4-dentata</i> , Thoms.	160
<i>Dorcatoma bovistæ</i> , (Economy of.) ...	180	<i>Nemosoma elongata</i>	180
<i>Dromius sigma</i>	270	<i>Nitidula flexuosa</i> , at Scarborough ..	248
Ega, Casteln.	102	<i>Odontæus mobilicornis</i> , at Cirencester	38
<i>Elaphrus lapponicus</i>	74	<i>Oopterus</i>	14
<i>Emus hirtus</i>	85	<i>Oxygonia albitænia</i>	240
<i>Epuræa silacea</i>	74	<i>cyanopis</i>	240
<i>Eucærus</i> , Lec., recharacterized	77	<i>dentipennis</i>	239
<i>Endalia</i> , Casteln. ,	32	Mann., recharacterized. 237, 287	
<i>Geotrupes mesoleius</i> , Thoms.	107	<i>prodiga</i>	239
<i>vernalis</i> , and allies	8	<i>Schœnherrii</i>	238
<i>Gymnetron linearæ</i> , Galls of.	108	<i>Vuillefroyi</i>	239
<i>Gymnusa brevicollis</i> , at Manchester..	289	<i>Oxytelus depressus</i> , allies of.	37
<i>variegata</i> , , , ..	289	<i>Phlæcophagus spadix</i> , in quantity.	85
<i>Haplocnemus nigricornis</i>	38	<i>Phyllodroma Delia</i>	287
<i>Heterothops prævius</i> , in quantity ..	161	<i>Platydemia violacea</i>	248
<i>Homalium Allardii</i>	289	<i>Pogonus littoralis</i> , ? British.	269
<i>rugulipenne</i> , in Wales ..	204	<i>Prionocalus caciens</i> , ♀ described	262
<i>Homalota angusticollis</i>	289	, White, recharacterized..	260
<i>autumnalis</i>	289	<i>Pyrochroa pectinicornis</i>	74
<i>Eichhoffi</i> , near London ..	270	<i>Quedius puncticollis</i>	161
<i>elegantula</i> , in Yorkshire..	38	<i>scitus</i>	15
<i>eremita</i> , near Manchester. 289		<i>Salpingus ater</i>	74, 97
<i>fuscifemorata</i> , , ..	289	<i>Scydmænus pusillus</i>	270
<i>hepatica</i>	38	<i>rubicundus</i>	15
<i>occulta</i> , var.	289	<i>Sphallax peryphoides</i> , H. W. Bates =	
<i>Hydnobius punctatus</i>	204	<i>Actenonyx bembidioides</i> ,	
<i>Hydroporus obsoletus</i> , deformed	288	White	30 (note)
<i>Hypera polygoni</i> , (Economy of.)	205	<i>Stolonis</i> , Mots., recharacterized	148
<i>Lachnophorinæ</i> , characterized.	29	<i>Strangalia auralenta</i>	85
<i>Lachnophorus lævicollis</i>	57	<i>Synchita</i> ? <i>mediolanensis</i>	85
<i>tenuicollis</i>	57	<i>Tachyporus nitidicollis</i> , at Sherwood. 289	
<i>tessellatus</i>	57	<i>Tachys æneopiceus</i>	13
<i>Læmophlæus bimaculatus</i>	85	<i>monochrous</i>	13
<i>Lathridius carbonarius</i>	85	<i>ornatus</i>	13
<i>Leptura scutellata</i>	85	<i>Thyamis agilis</i> , redescribed	160
<i>Loxandrus</i> , Lec., recharacterized.	104	<i>Tomoxia biguttata</i>	85
		<i>Trichonyx sulcicollis</i> , at York	135
		<i>Tychius 5-punctatus</i>	85
		<i>Xantholinus lentus</i> , at Braemar	74

DIPTERA.

	PAGE
<i>Empis lutea</i>	283
<i>punctata</i>	282
<i>scutellata</i>	284
<i>stercorea</i>	281
<i>trigramma</i>	282

HEMIPTERA—HETEROPTERA.

<i>Æthus lævis</i>	110
<i>Corizus Abutilon</i>	23, 136
<i>parumpunctatus</i>	136
<i>Corsican species</i>	191
<i>Cydnus nigritus</i>	110
,, v. <i>Æthus</i>	110, 161
<i>Dieuches luscus</i>	110
<i>Eremocoris erraticus</i> , at Caterham ..	289
,, , in snow-fields..	98
<i>Hypnophilus micropterus</i> , developed.	136
<i>Metratropis rufescens</i>	136
<i>Monanthia 4-maculata</i>	137
<i>Pentatoma juniperina</i> , hybernating..	289

HEMIPTERA—HOMOPTERA.

<i>Fulgora candelaria</i>	167
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HYMENOPTERA.

<i>Hemimachus fasciatus</i>	181
<i>Hemiteles tenuicornis</i>	162, 180
<i>Myrmecomorphus rufescens</i>	65
<i>Nematus Vallisnerii</i>	109
<i>Pezomachus trux</i>	162, 180

LEPIDOPTERA.

<i>Acentropus niveus</i>	185
<i>Acidalia emutaria</i>	184
<i>promutata</i>	184
<i>Acronycta aceris</i>	18
<i>alni</i>	139
<i>auricoma</i>	188
<i>Agdistes Bennettii</i>	185
<i>Agrotis corticea</i>	89
<i>pyrophila</i>	211
<i>Anarsia genistæ</i> bred	114
<i>Anerastia Farrella</i>	290
<i>Anthocharis Belemia</i>	228
<i>Eupheno</i>	228

<i>Antispila Rivillei</i> , Larva of	146
<i>Apamea unanymis</i>	207
<i>Aplasta ononaria</i>	92
<i>Argynnis Adippe</i>	166, 183, 206
<i>Aglaia</i> , Variety of	112
<i>Ino</i>	39
<i>Niobè</i>	166, 183, 206
<i>Aspilates gilvaria</i>	116
<i>Botys terrealis</i>	67
<i>Butalis cicadella</i>	92, 138
<i>senescens</i> ..	234
<i>Callimorpha Hera</i>	87
<i>Chesias obliquaria</i>	67
<i>Chilo mucronellus</i>	68
<i>Chloëphora prasinana</i>	138
<i>Cidaria suffumata</i> , Variety of	39
<i>Clisiocampa castrensis</i>	185
<i>Cænonympha Tiphon</i>	66
<i>Cossus ligniperda</i>	70
<i>Crambus myellus</i>	70, 113
<i>Crateronyx Philopalus</i>	230
<i>Danaïs Archippus</i>	17
<i>Dasydia obfuscata</i>	20
<i>Dasypolia Templi</i>	211
<i>Deilephila euphorbiæ</i>	166
<i>galii</i>	112
<i>Deiopeia pulchella</i>	111
<i>Depressaria Douglasella</i> bred	114
<i>Weirella</i> bred	114
<i>Eidophasia Messingiella</i> bred	71
<i>Emmelesia unifasciata</i> ..	67
<i>Erebia Arachne</i> , var. <i>Pitho</i>	39
<i>Pirene</i>	39
<i>Eubolia gazella</i>	231
<i>Euperia fulvago</i> , Variety of	187
<i>Eupithecia irriguata</i> , Larva of	69
<i>subciliata</i>	290
<i>Gymnancycla canella</i>	163
<i>Hadena suasa</i>	67
<i>Halias quercana</i>	70
<i>Heliothis armigera</i> ...	138, 166, 167, 185
<i>Hepialus velleda</i>	66
<i>Herminia tarsipennalis</i>	67
<i>Homœosoma saxicola</i>	68
<i>Hybernia aurantiaria</i>	90
<i>Hydrelia unca</i>	67
<i>Incurvaria canariella</i>	210

	PAGE		PAGE
<i>Leucania albipuncta</i>	111	<i>Spilosoma papyratia</i>	184
<i>straminea</i>	248	<i>Stilbia anomala</i>	67
<i>Liparis auriflua</i>	66	<i>Tæniocampa leucographa</i>	17
<i>salicis</i>	206	<i>opima</i>	17
<i>Lithosia complana</i> , Larva of	174	<i>Tapinostola clymi</i> bred.....	70
<i>mesomella</i>	172	<i>Tephrosia crepuscularia</i> , Varieties of.	272
<i>muscerda</i>	173	<i>Thecla ilicis</i>	39
<i>Lycæna Acis</i>	113	<i>Thestor mauritanicus</i>	229
<i>Mamestra abjecta</i>	185	<i>Tinea misella</i>	251
<i>Melitæa Athalia</i>	258	<i>pallescentella</i> bred	209
<i>Miana arcuosa</i> bred	70	<i>Tortrix piceana</i>	272
<i>Micropteryx imperfectella</i>	233	<i>Tlyphæna orbona</i> , Varieties of.....	273
<i>Nacila punctata</i>	229	<i>Urodeta cisticoella</i>	235
<i>Noctua sobrina</i>	112	<i>Vanessa Antiopa</i>	110
<i>umbrosa</i>	139	<i>polychloros</i> , Egg of	52
<i>Nudaria senex</i>	170	<i>urticæ</i> , Egg of	52
<i>Nyssia lapponaria</i>	16	<i>Xyliua furcifera</i> (conformis).....	114
<i>pomonaria</i>	17		
<i>Panagra petrarica</i>	67	NEUROPTERA (<i>in the Linnæan sense</i>).	
<i>Phibalapteryx lapidata</i>	165	<i>Agrion</i> (<i>Pyrrhosoma</i>) <i>tenellum</i> ..	65, 87
<i>lignata</i>	18	(<i>Erythromma</i>) <i>najas</i>	87
<i>Pieris Daplidice</i>	111, 137, 166	(<i>Ischnura</i>) <i>pumilio</i>	87
<i>Platyptilus gonodactylus</i>	138	<i>Agrypnia Pagetana</i>	137
<i>trigonodactylus</i>	137	<i>Calopteryx Vesta</i> (<i>Virgo</i> ?)	87, 161
<i>Zetterstedtii</i>	137	<i>Lestes virens</i>	87
<i>Porthesia chrysorrhœa</i>	18	<i>Libellula fulva</i>	86
<i>Pterophorus isodactylus</i>	153	(<i>Leucorrhinia</i>) <i>dubia</i>	86
<i>Lienigianus</i>	156	(<i>Sympetrum</i>) <i>flaveola</i> ..	86, 127
<i>plagiodactylus</i>	156	(„) <i>sanguinea</i> ..	86
<i>teucris</i>	155	(„) <i>scotica</i>	86
<i>Rhodophæa marmorella</i> bred	71	<i>Phacopteryx brevipennis</i>	137
<i>Scopula ferrugalis</i>	67	<i>Plectrocnemia conspersa</i>	144
<i>Sesia chrysidiformis</i>	88	<i>Sialis fuliginosa</i>	39, 65
<i>philanthiformis</i>	66		
<i>Setina irrorella</i>	171	ORTHOPTERA.	
<i>Sphinx convolvuli</i>	111, 167	<i>Tettix bipunctata</i> ..	16
		<i>subulata</i>	16

INDEX TO CONTRIBUTORS.

	PAGE		PAGE
Agassiz, Alex. (extract)	96	Kidd, H. W.	108
Barrett, C. G.117, 134, 153, 205, 246, 250, 271, 272		Kirby, W. F.	41, 142
Bartlett, Henry	187	Knaggs, H. G., M.D., F.L.S.	110, 163, 182
Bates, H. W., F.L.S., &c.11, 29, 54, 77, 102, 129, 148, 176, 199, 237, 263, 285		Lawson, Robert	248, 288
Batty, James	70	Lennon, W.	274
Birchall, Edwin	6	Lewis, W. Arnold, F.L.S.	1
Blackmore, Trovey.....	228	Llewelyn, J. T. D., M.A., F.L.S.	272
Bloomfield, Rev. E. N., M.A.	188	Lockyer, B.	139
Briggs, J. H., B.A.93, 137		McLachlan, R., F.L.S.39, 40, 65, 92, 93, 100, 139, 143, 161, 273	
Broadhurst, W.	289	McNab, Prof. W. R., M.D.	38
Buckler, William ..21, 22, 68, 89, 114, 139, 153, 163, 169, 207, 248, 258		Marsh, J. G.	248
Butler, A. G., F.L.S., &c. .. 166, 167, 206		Marshall, Rev. T. A., M.A., F.L.S.65, 162, 180, 191, 257	
Carrington, T. J.	17	Mathew, G. F., R. N., F.L.S.18, 206	
Champion, G. C.84, 247, 270		Matthews, Rev. A., M.A.	151
Chapman, Thomas	175	Miskin, W. H.	17
Cowper, R.	166	Moncreaff, H.	136
Crotch, G. R., M.A.	71	Morley, T.	135
Dale, C. W.	139	Morris, Rev. F. O., B.A.	138
Davis, W. E.	162	Müller, Albert, F.L.S.99, 109, 127, 181, 273	
Dietze, C. (extract)	290	Murray, Rev. R. P., M.A.	38, 211
D'Orville, H.87, 111, 138		Norman, George	39, 70, 210, 273
Doubleday, H.86, 183, 271		Packard, A. S., Jun., M.D.	206
Douglas, J. W.23, 60, 64, 111, 136, 289		Perris, E. (extract)	92
Dunning, J. W., M.A., F.L.S., &c. .. 212, 253, 274, 291		Porritt, G. T.39, 88, 91, 183, 208	
Eales, C.111, 209		Purdey, W.	92
Edwards, W.	112	Reed, Edwyn C.	76
Fletcher, J. E.	161	Robinson, W. Douglas	185
Goss, H.	111	Rotheram-Websdale, Chas. G.	288
Gossett, C. H.	167	Rye, E. C.15, 37, 74, 82, 107, 135, 158, 159, 160, 179, 203, 204, 248, 267, 269, 288	
Hardy, J. R.	289	Saunders, Edward, F.L.S.110, 161	
Hellins, Rev. J., M.A.18, 20, 52, 69, 90, 116, 165, 166, 169		Scott, John	23, 60, 191, 243
Hislop, R.	269	Scudder, S. H.	122
Hodgkinson, J. B.71, 114		Sharp, David, M.B.8, 73, 83, 151, 158, 247, 254, 290	
Hollyoak, Harry	85	Sidebotham, J.	180
Hudd, A. E.110, 113		Stainton, H. T., F.R.S.146, 210, 232, 290	
Hutchinson, H.135, 160, 205		Stevens, Samuel, F.L.S.	138
Hutchinson, T.	112	Swinton, A. H.	70
Jarvis, J. B.	111	Thorpe, J.	111
Jenner, J. H. A.211, 250		Tylden, Rev. W., M.A.	205
Jordan, R. C. R., M.D.45, 137, 251		Ulyett, H.	42, 88
Keeley, R. G.	15	Verrall, G. H.	281

	PAGE
Walker, J. J.	184
Ward, Christopher	34, 58, 81, 118
Warrington, J.	113
Waterhouse, C. O. ...	5, 260
Waterhouse, E. A.....	14, 15, 38, 66, 161, 205
Wheeler, F. D.....	110, 112

	PAGE
White, F. Buchanan, M.D....	16, 65, 66, 68, 70, 97, 169, 196, 271, 290
White, Rev. W. F., M.A.	166
Wilson, W. P.	166
Wollaston, T. V., M.A., F.L.S.....	37
Wonfor, T. W.....	111
Wood, Rev. J. G., M.A., F.L.S.	111
Wormald, Percy C.....	137

LIST OF NEW GENERA AND SPECIES, &c., DESCRIBED IN THIS VOLUME.

COLEOPTERA.

GENERA.	PAGE
ADRIMUS, <i>H. W. Bates</i>	176
AMPHITHASUS, ,,	32
APORESTHUS, ,,	103
LACHNACES, ,,	201
METONCIDUS, ,,	133
MIZOTRECHUS, ,,	199
PENTACOMIA, ,,	265

SPECIES.

Adrimus creperus, <i>Bates, Pará</i>	178
geminatus, ,, <i>Ega</i>	177
microderus, ,, ,,	176
rufangulus, ,, ,,	177
viridescens, ,, <i>Amazons</i>	177
Amphithasus truncatus, ,, <i>Ega</i>	33
Anchonoderus scabricollis,, <i>R. Janeiro.</i>	34
subtilis, ,, <i>Guatemala</i>	33
Anisotoma lunicollis, <i>Rye, England</i>	203
Aporesthus anomalus, <i>Bates, R. Janeiro.</i>	103
Chalybe basalis, ,, <i>Tapajos</i> ...	80
leucopa, ,, <i>Amazons</i> ...	80
tumidula, ,, <i>Ega</i>	81
Cicindela chalceola, ,, <i>N. Peru</i> ...	265
Gormazi, <i>Reed, Chili</i>	77
hispidula, <i>Bates, S. Brazil</i> ...	264
microtheres, ,, <i>Equador</i> ...	265
Diploharpus ebeninus, ,, <i>Amazons</i> ...	178
rubripes, ,, <i>Ega</i>	178
sexstriatus, ,, ,,	179
striolatus, ,, ,,	178
Dromica Mauchii, ,, <i>S.E. Africa</i>	287
polyhirmoides, ,, ,,	286
Ega biloba, ,, <i>Santarem</i> ...	103
nodicollis, ,, <i>Amazons</i> ...	103
Eucærus geminatus, ,, <i>Santarem</i> ...	78
hilaris, ,, <i>Amazons</i> ...	79

	PAGE
(Eucærus) lebioïdes, <i>Bates, Santarem</i> ...	79
pulchripennis, ,, <i>Tapajos</i> ...	79
sericeus, ,, <i>Ega</i>	78
striatus, ,, <i>Santarem</i> ...	78
sulcatus, ,, <i>Tapajos</i> ...	78
Eudalia Macleayi, ,, <i>N. S. Wales</i>	32
Eudectus Whitei, <i>Sharp, Scotland</i> ...	73
Geotrupes causicus, ,, <i>Persath</i> ...	10
Lachnaces badistrinus, <i>Bates, Ega</i>	202
olisthopoides, ,, ,,	202
opacicollis, ,, ,,	202
sericeus, ,, ,,	201
Lachnophorus æneicollis, ,, <i>Amazons</i> ...	54
foveatus, ,, ,, ...	55
latus, ,, <i>Tapajos</i> ...	54
macrospilus, ,, <i>Amazons</i> ...	58
ochropus, ,, ,, ...	56
ornatus, ,, ,, ...	58
pictipennis, ,, <i>Mexico</i> ...	57
quadrinotatus,, <i>R. Janeiro.</i>	55
quadrinus, ,, ,,	54
submaculatus,, <i>Amazons</i> ...	56
tibialis, ,, ,, ...	56
Loxandrus attenuatus, ,, <i>Tapajos</i> ...	133
calathoides, ,, <i>R. Janeiro.</i>	106
celebensis, ,, <i>Celebes</i> ...	133
curtonotus, ,, <i>Ega</i>	129
fulvicornis, ,, ,,	106
gravescens, ,, <i>Tapajos</i> ...	130
laevicollis, ,, <i>R. Janeiro.</i>	105
macroderus, ,, <i>Amazons</i> ...	132
opaculus, ,, <i>Tapajos</i> ...	132
picticauda, ,, ,, ...	130
politissimus, ,, <i>Ega</i>	105
quadrinotatus,, <i>Amazons</i> ...	131
rubescens, ,, ,, ...	130
rufostigma, ,, <i>Ega</i>	130
subcordicollis, ,, <i>Amazons</i> ...	129

	PAGE
(Loxandrus) subparallelus, <i>Bates, Amazons</i>	130
sulcatus, ,, <i>Ega</i>	105
tetrastigma, ,, 	131
viridescens, ,, <i>Amazons</i> ...	132
vittatus, ,, <i>R. Janeiro</i> .	131
xanthopus, ,, <i>Amazons</i> ...	106
<i>Meligethes pictus</i> , <i>Rye, England</i>	74
=mutabilis, <i>Rosenh.</i>	269, 288
<i>Metoncidus tenebrionides</i> , <i>Bates, Ega</i> ...	134
<i>Mizotrechus lævigatus</i> , <i>Bates, Mexico</i> ...	200
lævilateris, ,, <i>Ega</i>	199
novemstriatus, ,, 	199
Ozenoides, ,, 	200
præcisus, ,, <i>Tapajos</i> ...	200
vixstriatus, ,, <i>Brazil</i> ...	200
<i>Odontocheila iodopleura</i> , ,, <i>Nicaragua</i>	285
vermiculata, ,, <i>Equador</i> ...	285
<i>Oopterus lævicollis</i> , ,, <i>N. Zealand</i>	14
Maceyi ,, <i>Falklands</i>	13
<i>Oxycheila Chestertonii</i> , ,, <i>N. Granada</i>	264
gracillima, ,, <i>Equador</i> ...	263
nigroænea, ,, ,, ...	263
,, ,, <i>var. variipes</i> , <i>Equador</i>	263
polita, ,, <i>Nicaragua</i>	264
<i>Oxygonia annulipes</i> , ,, <i>Equador</i> ...	242
Buckleyi, ,, ,, ...	241
carissima, ,, ,, ...	242
floridula, ,, ,, ...	241
gloriola, ,, ,, ...	240
moronensis, ,, ,, ...	242
<i>Pentacomia chrysamma</i> , ,, ,, ...	266
<i>Plusiotis marginatus</i> , <i>C. O. Waterhouse</i> , <i>Chiriqui</i>	5
<i>Prionocalus Buckleyi</i> , ,, <i>Equador</i>	261
<i>Ptenidium Kraatzii</i> , <i>Matthews, Scotland</i>	152
<i>Ptilium caledonicum</i> , <i>Sharp</i> , ,,	73
<i>Stolonis apicata</i> , <i>Bates, Ega</i>	149
fulvostigma, ,, <i>R. Janeiro</i> .	148
gracilis, ,, <i>Tapajos</i> ...	150
lævicollis, ,, <i>Amazons</i> ...	149
leistoïdes, ,, ,, ...	149
leucotela, ,, <i>S. Brazil</i> ...	149
ovaticollis, ,, <i>Ega</i>	150
<i>Syncalypta hirsuta</i> , <i>Sharp, England</i>	151
<i>Tachys cycloderus</i> , <i>Bates, R. Janeiro</i> .	11
diminutus, ,, <i>Santarem</i> ..	11
monostictus, ,, <i>Tapajos</i> ...	11
subangulatus, ,, <i>R. Janeiro</i> .	11
<i>Tachyta crucigera</i> , ,, ,,	12
livida, ,, <i>S. Austr.</i> ...	13

	PAGE
(<i>Tachyta</i>) melania, <i>Bates, R. Janeiro</i> ...	12
parallela, ,, <i>Ega</i>	12
xanthura, ,, <i>R. Janeiro</i>	12
<i>Therates bellulus</i> , ,, <i>Philippines</i> ...	286
caligatus, ,, ,, ...	285
<i>Trichopteryx cantiana</i> , <i>Matthews, England</i>	153
Edithia, ,, ,,	152
fuscula, ,, ,,	152
longula, ,, ,,	152

DIPTERA.

<i>Cecidomyia pteridis</i> , <i>Müller, England</i> ...	99
<i>Empis concolor</i> , <i>Verrall</i> , ,, ...	283

HEMIPTERA-HETEROPTERA.

GENERA.

<i>ANTIPALOCORIS</i> , <i>Scott</i>	244
<i>MIMOCORIS</i> , ,, 	194
<i>PSEUDOPHLEPS</i> , <i>Douglas & Scott</i>	60

SPECIES.

<i>Agalliasstes ochraceus</i> , <i>Scott, Corsica</i>	243
unicolor, ,, ,, 	243
<i>Antipalocoris</i> Marshalli, ,, ,, 	245
<i>Brachyplax linearis</i> , ,, ,, 	193
<i>Drymus latus</i> , <i>Douglas & Scott, England</i>	25
<i>Litosoma atricapilla</i> , <i>Scott, Corsica</i>	194
<i>Macropterna bicolor</i> , ,, ,,	193
<i>Mimocoris camaranoïdes</i> , ,, ,,	195
<i>Salda venustula</i> , ,, ,,	243
<i>Scolopostethus crassicornis</i> , <i>D. & Scott</i> , <i>England</i>	24

HYMENOPTERA.

<i>Wesmaëlia cremasta</i> , <i>Marshall, England</i> <i>and Spain</i>	257
--	-----

LEPIDOPTERA.

<i>Acraea Peneleos</i> , <i>Ward, Camaroons</i>	60
Pentapolis, ,, ,, 	60
Pharsalus, ,, ,, 	81
Polydectes, ,, ,, 	81
Satis, ,, <i>E. Africa</i>	35
<i>Atella Manoro</i> , ,, <i>Madagascar</i> ...	121
<i>Butalis tangerensis</i> , <i>Stainton, Tangier</i> ...	235
<i>Charaxes Hadrianus</i> , <i>Ward, Camaroons</i> ...	120
paphianus, ,, ,,	120
<i>Crenis Benguelæ</i> , <i>Chapman, S. W. Africa</i>	175
<i>Elachista sepulchrella</i> , <i>Stainton, Morocco</i>	235
<i>Erebia Passandava</i> , <i>Ward, Madagascar</i> .	122
<i>Eronia Verulanus</i> , ,, <i>Camaroons</i> ...	59

	PAGE
Euryphene camarensis, <i>Ward, Camaroons</i>	35
Cercestis, " "	36
Comus, " "	82
Nivara, " "	82
Porphyron, " "	118
ribensis, " <i>E. Africa</i>	35
Godartia Crossleyi, " <i>Camaroons</i>	36
Trajanus, " "	36
Harma capella, " "	119
Ciceronis, " "	119
Cyclades, " "	119
Cyriades, " "	120
Junonia Kowara, " <i>O. Calabar</i>	82
Lithocolletis tangerensis, <i>Stainton, Tangier</i>	236
Mycalesis Anganavo, <i>Ward, Madagascar</i>	122

	PAGE
Neptis Biafra, <i>Ward, Camaroons</i>	121
Papilio Andronicus, " "	121
Constantinus, " <i>E. Africa</i>	34
Phoxopteryx paludana, <i>Barrett, England</i>	134
Pieris Capricornus, <i>Ward, Camaroons</i>	59
Cebren, " "	59
Rhodanus, " "	58
Scoparia scotica, <i>White, Scotland</i>	169
Sericoris Doubledayana, <i>Barrett, England</i>	246
Solenobia pretiosa, <i>Stainton, Morocco</i>	233
NEUROPTERA (in the Linnean sense).	
Bittacus apterus, <i>McLachlan, California</i>	100
Plectrocnemia brevis, " <i>Switzerland</i>	145
geniculata, " <i>Eng. & Switz.</i>	145

ADDITIONS TO THE BRITISH INSECT FAUNA BROUGHT FORWARD IN THIS VOLUME.

COLEOPTERA.

GENERA.	PAGE
CISSOPHAGUS, <i>Chapuis</i>	107
COMPSOCHILUS, <i>Kraatz</i>	37
EUDECTUS, <i>Redt.</i>	73
EUSOMUS, <i>Germ.</i>	83
POLYGRAPHUS, <i>Er.</i>	82
URODON, <i>Schön.</i>	84
XYLECHINUS, <i>Chapuis</i>	107
ZILORA, <i>Mulsant</i>	74

SPECIES.

Agriotes sordidus, <i>Ill.</i>	83
Anisotoma lunicollis, <i>Rye (sp. n.)</i>	203
? scita, <i>Er.</i>	158
Apion annulipes, <i>Wenck.</i>	159
Atomaria atra, <i>Hbst.</i>	135
badia, <i>Er.</i>	74
Bagoüs nigratarsis, <i>Thoms.</i>	83
Baridius chlorizans, <i>Germ.</i>	83
? Cassida Chloris, <i>Suffr.</i>	84
Ceuthorhynch(ide)us Crotchii, <i>Bris.</i>	159
pulvinatus, <i>Gyll.</i>	83
Ceuthorhynchus rotundatus, <i>Bris.</i>	83
Cis elongatulus, <i>Gyll.</i>	83
Cissophagus hederæ, <i>Schm.</i>	107
Compsophilus palpalis, <i>Er.</i>	37
Cryphalus granulatus, <i>Ratz.</i>	84
Cryptophagus parallelus, <i>Bris.</i>	158
punctipennis, "	158

	PAGE
Eudectus Whitei, <i>Sharp (sp. n.)</i>	73
Eusomus ovulum, <i>Ill.</i>	83
Geotrupes pyrenæus, <i>Charp.</i>	10
Homalota atrata, <i>Mann.</i>	247
difficilis, <i>Bris.</i>	247
fimorum, "	247
humeralis, <i>Ktz.</i>	247
Hydnobius spinipes, <i>Gyll.</i>	204
Hylurgus minor, <i>Htg.</i>	74
Lathrobium atripalpe, <i>Scriba.</i>	83
Lesteva muscorum, <i>Dub.</i>	83
Lithocharis diluta, <i>Er.</i>	83
Magdalinus Heydeni, <i>Desbr.</i>	84
Meligethes incanus, <i>Stm.</i>	268
pictus, <i>Rye (sp. n.)</i>	74
= mutabilis, <i>Rosenh.</i>	269, 288
Melœ cyaneus, <i>Muls.</i>	248, 288
= proscarabæus, <i>Auct., var.</i>	288
Olophrum consimile, <i>Gyll.</i>	73
Orchestes sparsus, "	83
Orthoperus atomarius, <i>Heer</i>	83
Oxytelus Fairmairei, <i>Pand.</i>	83
Phalacrus brunnipes, <i>Bris.</i>	83
Polygraphus pubescens, <i>Fab.</i>	82
Ptenidium atomaroides, <i>Mots.</i>	152
Kraatzii, <i>Matth. (sp. n.)</i>	152
Ptilium caledonicum, <i>Sharp (sp. n.)</i>	73
Ptinus subpilosus, <i>Müll.</i>	83
Quedius brevicornis, <i>Thoms.</i>	14

Rhyncolus gracilis, <i>Rosenh.</i>	84
Seydmænus carinatus, <i>Muls.</i>	83
Sitones brevicollis, <i>Schön.</i>	83
Syncalypta hirsuta, <i>Sharp (sp. n.)</i>	151
Thinobius major, <i>Ktz.</i>	83
Trichopteryx cantiana, <i>Matthews (sp. n.)</i>	153
Edithia, " " "	152
fuscula, " " "	152
longula, " " "	152
rivularis, <i>Allib.</i>	152
Throscus carinifrons, <i>Bonv.</i>	135
Urodon rufipes, <i>Fab.</i>	84
Xylechinus pilosus, <i>Ratz.</i>	107
Zilora ferruginea, <i>Payk.</i>	74

DIPTERA.

Cecidomyia pteridis, <i>Müller (sp. n.)</i>	99
Empis concolor, <i>Verrall (sp. n.)</i>	283

HEMIPTERA-HETEROPTERA.

GENUS.

PSEUDOPHLEPS, <i>Douglas & Scott (g. n.)</i>	60
--	----

SPECIES.

Drymus latus, <i>D. & Scott (sp. n.)</i>	25
Lasiosomus enervis, <i>H.-Schff.</i>	26
Nysius maculatus, <i>Fieb.</i>	27
? Phytocoris pini, <i>Kirschb.</i>	136
Pseudophleps inconspicuus, <i>D. & S. (sp. n.)</i>	61

Salda arenicola, <i>Scholtz</i>	28, 137
sp. n. ?	137
Scolopostethus crassicornis, <i>D. & S. (sp. n.)</i>	24

HYMENOPTERA.

GENUS.

WESMAËLIA, <i>Först.</i>	257
--------------------------------	-----

SPECIES.

Wesmaëlia cremasta, <i>Marshall (sp. n.)</i> ...	257
--	-----

LEPIDOPTERA.

Agrotis helvetina, <i>Bdv.</i>	182
Crambus alpinellus, <i>Hüb.</i>	110
Pempelia albariella, <i>Zeller</i>	162, 163
" " ? = <i>Davisella, Newm.</i>	271
Phoxopteryx paludana, <i>Barrett (sp. n.)</i> ...	134
Platyptilus sp. n. ?	137
Scoparia scotica, <i>White (sp. n.)</i>	169
Sericoris Doubledayana, <i>Barrett (sp. n.)</i> ..	246
Tæniocampa gothicina, <i>H.-Schf.</i>	39
Zelleria saxifragæ, <i>Staint.</i>	271
Zygæna exulans, <i>Hehw.</i>	68

NEUROPTERA (in the Linnæan sense).

Plectrocnemia geniculata, <i>McL. (sp. n.)</i> ...	145
--	-----

ORTHOPTERA.

Tettix Schrankii, <i>Fieb.</i>	15, 16
--------------------------------------	--------

LARVÆ OF BRITISH SPECIES DESCRIBED IN THIS VOLUME.

COLEOPTERA.

Dendrophagus crenatus, <i>F. B. White</i>	197
---	-----

LEPIDOPTERA.

Acidalia strigilata, <i>G. T. Porritt</i>	91
" trigeminata, <i>W. Buckler</i>	22
Agrotis corticea, "	89
Apamea unanimis, "	207
Aspilates gilvaria, <i>Rev. J. Hellins</i>	116
Dasydia obfuscata, "	20
Ephyra punctaria, <i>G. T. Porritt</i>	183
Eremobia ochroleuca, <i>W. Buckler</i>	21
Gymnancycla canella "	163
Hybernia aurantiaria, <i>Rev. J. Hellins</i>	90
Leucania straminea, <i>W. Buckler</i>	248
Lithosia mesomella, " <i>and Rev. J. Hellins</i>	172
" muscerda, " "	173

	PAGE
Melitæa Athalia, <i>W. Buckler</i>	259
Noctua umbrosa, "	139
Nudaria mundana, " <i>and Rev. J. Hellins</i>	171
" senex, " "	170
Phibalapteryx lapidata, <i>Rev. J. Hellins</i>	165
" lignata, "	18
Pterophorus isodactylus, <i>W. Buckler</i>	154
" Lienigianus, "	158
" plagiodactylus, "	156
" teucarii, "	155
Setina irrorella, " <i>and Rev. J. Hellins</i>	171
Tapinostola elymi, "	68
Tephrosia crepuscularia, <i>G. T. Porritt</i>	208
Xylina furcifera, <i>W. Buckler</i>	114

REVIEWS.

"Transactions of the Norfolk and Norwich Naturalists' Society, 1870-71."	118
"A Synonymic Catalogue of Diurnal Lepidoptera."—W. F. Kirby.....	142
"The Micrographic Dictionary."	167
"Skandinaviens Neuroptera."—H. D. J. Wallengren.....	188
"Hymenoptera Scandinaviæ, tom. I."—C. G. Thomson	189
"A Catalogue of British Hymenoptera (Aculeata)."—F. Smith	212
"Fauna Perthensis, pt. I, Lepidoptera."—Dr. F. Buchanan White	276
"Trichopterygia illustrata et descripta. A Monograph of the Trichopterygia."—The Rev. A. Matthews, M.A.	277

OBITUARY.

James Charles Dale	255
Dr. Franz Xaver Fieber.....	278
Prof. François Jules Pictet	294
Charles Horne	295

WOOD-CUTS.

Bittacus apterus, McL., and details.....	101
Plectrocnemia conspersa, Curt., ♂ and ♀ appendices	144
" brevis, McL. (sp. n.), ♂ "	145
" geniculata, McL. (sp. n.), ♂ "	145

ERRATA.

Page 13, line 11 from bottom, for "striæ" read "stria."	
" 62, " 4 " top, " "Satl" " "Stål."	
" 108, " 25 " " " "reveral" read "several."	
" 147, " 14 " " before "at" insert "except."	
" 203, " 9 " " for "elavatis" read "elevatis."	
" 246, " 4 " bottom, " "Buck" " "Breck."	
" 272, " 18 " top, " "and" " "var."	
" 275, " 19 " " " "species" " "specific,"	
" " " 12 " bottom, " "name <i>Lycæna</i> " read "name of the <i>Lycæna</i> ."	
" 276, " 14 " top, between "part" and "of," insert "of the name."	

THE

Entomologist's Monthly Magazine

VOLUME VIII.

ON THE APPLICATION OF THE MAXIM "*COMMUNIS ERROR
FACIT JUS*" TO SCIENTIFIC NOMENCLATURE.

BY W. ARNOLD LEWIS.

It has occurred to me, that some slight amplification of the views I ventured to express on this head at the April meeting of the Entomological Society might be made the subject of a note for the "Magazine." My suggestion is, that the maxim "*communis error facit jus*" should govern scientific nomenclature; and, in support of it, I beg to submit to entomologists the following considerations.

In the first place, changes in names bring absolutely *no benefit to science*: I place this in the front of my position. The study bestowed on books, with the express object of now and then disinterring a "prior" name, is, regarded from a purely scientific point of view, merely so much hard labour. The writers who bring out a few hundred forgotten names do science no service at all; and the publication of a single unnoticed fact in the habits of the hive-bee is of greater value to science than a reform of the nomenclature of all the Orders. Science is supremely indifferent as to the names by which its subjects are designated; and those Americans who have begun to name species "Know-nothing," and so on, may be by far the best observers, and be doing more for science than a dozen of your keen reformers of nomenclature. It is dreadfully frivolous work, I venture to think, this routing out from libraries of doubtful and obscure descriptions, and the spending of precious years in nicely balancing considerations upon the priority of a name. To give the title of scientific discovery to such a process would be to apply rich gilding to a very cheap and common sort of ginger-bread. But, besides this work doing science no service, it unhappily supplies a kind of "fatigue duty," to keep employed energies which, if better directed, would produce something worthy and profitable. A small part only of the acumen brought to bear on such studies would ere this have been supplied us in England with a scheme of the arrangement of the *Lepidoptera*; and, if that be not too much to expect, with a Lepidopterist able to explain it.

Further, it is a hindrance to entomological science to have paltry contentions about names continually pushed forward, and for its professors to be so constantly busied in the investigation of other men's errors. The cause of science is not advanced a jot when the confusion among old writers has been laid bare; the result of that operation, primarily, is to cast a considerable slur on the reputation of some men who, in their day, were thought to be great naturalists; but I do not know that we, the living, have become any the better for it. My proposal is *that no name* (whenever and wherever it may be discovered) *be received henceforth, to the displacement of a universally recognised name*; and this I humbly consider to be founded on strict common-sense.

Entomologists in their hearts know that disquisitions on names do not make science; and, whatever erudition may be spent on it, no such performance can raise itself above the level of learned trifling. If we suffer our entomological literature to consist, to so great an extent, of publications of this class, there will be no room in the market for better works; and our arrangement—for instance—will continue to be directed by the list-makers, who, if they know anything about it (which is always doubtful), at all events allow themselves to treat arrangement as an accessory to synonymy. If names are not science, then entomologists may please themselves about what name they will use. *Their agreement* is then all that is required to make any name right; and I hold that this is, beyond dispute, the real state of the case. The divine right of nomenclators is an invention. The *agreement* of entomologists might have been to make all people accept the first name; it might equally have been to make all accept the prettiest name, or the one with the most vowels, or (as has been suggested) the one accompanied by the best figured portrait of the insect. In fact, however, the agreement of entomologists has not been to acknowledge the earliest names, some writers having ignored all names given before 1767, while others will accept them. There is not, and never has been, any concord or serious understanding, and the present is a good time for arriving at a downright settlement of the question.

Let us take a plain, common-sense view. The root of the matter is this: it is of no interest to us by what different name an insect was once called, *so long as the students of science are now agreed on a name for it*; and this does not concern us any the more because the name we are all agreed on was not the first name given. You will not persuade the frequenters of Hyde Park to call the Row "Route du Roi" because that is the "prior" name; not even by establishing that "the Row" is

pre-occupied, because Paternoster Row had that name first given to it, and is so termed by many classical authors. Science, it is true, is everlasting ; but those who pursue it are only men.

I will not say that the books in which the old names are now being found are really not worth the study they receive ; but at all events it is sought to make us pay them a reverence which would be altogether misplaced. In a science where fresh discoveries are being made every year, the newest book ought to be the best ; and the greater number of the old entomological books are now, by comparison, very inferior affairs, whose counterpart would, in the present day, find no sale. To ascribe to one of such productions the authority of a classic would be a ridiculous piece of fetishism. In truth, those descriptive works are valuable chiefly as old books are always valuable ; and they show the growth of knowledge. Old books always interest a good many ; and I confess to entertaining a suspicion that those who make so much of these just now have taken to their studies the predispositions of the antiquary, rather than the cool scrutiny of the entomologist.

But it is suggested that justice to the first nomenclator requires that the name given by him should be adopted ; and this, being an *ad populum* argument, is the only one whose influence with entomologists I have at all feared. The very "injustice," however, which our rule would do, is done already by some of the most enlightened of our opponents.

" *Vivere fortes ante Agamemnona* "

—and learned men wrote before Linné. But, while the brave who lived too early for Homer died and made no sign, the entomologists who preceded Linnæus have left us the records of their labours. There is no reason at all (which, as I think, will bear a breath of discussion) why the work of these men should be passed over ; and I am at a loss to know how the advocates of these everlasting changes reconcile their demand for "justice" to the "old" authors with their abrupt refusal of it to those older still. Mr. Kirby, in particular, is most stern in his dealings with the writers who so far forgot themselves as to publish books before 1767. Their indecent haste to enlighten the world receives punishment with very short shrift. In a letter which I have had the pleasure to receive from him this month, he gives me his judgment in these words : "It seems to me that to go beyond 1767 would " overturn the very foundations of our scientific nomenclature, and " make us take the name *principissa* for *Lathonia*, from the first edition " of the 'Fauva Suecica ;' call the mole-cricket *Gryllo-talpa*, Mouffet (or, " perhaps, Aristotle ?), and put ourselves hopelessly to sea. I advocate

"the most wholesale changes on sufficient grounds; but we must draw the line somewhere." Now, if we must draw the line somewhere, why not draw it with me at June 1st, 1871? The whole basis of such a principle is the *accord* of entomologists, and Mr. Kirby can only invite their consent to a line being drawn at the epoch he names. I invite their consent to a line being drawn at another. The question, then, depends merely on the balance of convenience and expediency. Directly you get to "drawing lines" anywhere, there is no other consideration: "justice to old authors" has then been already thrown overboard, and expediency remains the only test; and it is precisely when you come to expediency that our maxim gathers all its laurels.

It is expedient to have certainty in nomenclature, and it is expedient to have that certainty at once. It is expedient to stop the flow of lists whose *raison d'être* is the introduction of a few new names, but which degrade the science by dictating unexplained changes.

It is expedient to have no more "synonymy," a word which has now lost all its original meaning. When, out of chaos, "synonymy" was born, it served a very useful object. Then, six persons called the same insect by as many different names, because they used different books. All the descriptive works on entomology were costly, and few people could possess more than their one author. Then, entomologists of different countries knew nothing of each other's books, and there was real confusion in the names of species and of genera. In short, the "error" among entomologists was then not "*communis*;" the majority knew nothing of any other name than that which they themselves used. The case is now so altered, that "synonymy" does not any longer answer its former function. All entomologists use one name in the vast majority of cases. There is no real confusion, even if different names are used; as, in the very few cases of doubt, entomologists know and use both the names (e.g., *Davus* and its synonyms), and no list-writer would be much of a guide in such contested cases as those. The evil in fact now is felt in quite the opposite direction to that in which it once showed itself. Of old, entomologists knew one name only and held to it right or wrong: now they are never satisfied. If a name has been long and generally in use, it is all the more eligible, the writers seem to think, as a victim to the shrine of "priority."* This restlessness is utterly absurd; but the only cure for it is a good broad rule, that entomologists will henceforth ignore all names but those in use *now*.

The function of "synonymy" now is not to supply a concordance

* I need not refer to instances; but Dr. Staudinger's miscalculated assault on *Podalirius* has become a joke already.—W. A. L.

for entomologists, by which those using different works may mutually understand each other. That was a benevolent office for which the originators of synonymic-lists deserve our thanks. All that is left for the lists now to do is the miserably different work of displacing names on which all are agreed; or proving the whole world is wrong and only the list-maker right. When it gets to this, it is time that authors of synonymic-lists should be declared *functi officiiis*. The resurrection-men of entomological literature need as prompt a suppression as their forerunners in another field of enterprise.

The straightforward way of putting it is to say that we want no new names; and I feel sure that in saying this I shall have the hearty support of the English Lepidopterists. If, in the very few cases now produceable where different names are in use in different countries, our names are wrong, we will give them up; but, after that is done, never come to us again with an innovating synonymic-list. We will "draw the line" here.

If only English Lepidopterists will speak and act up to this language, a stop will have been put to a great deal of profitless contention, we shall begin to have books instead of catalogues, and entomologists may take to advancing the science as it is at present, instead of "harking back" to investigate the period of its infancy. We shall get rid of small hero-worship, the stumbling block of the weaklings among entomologists; and at the same time be spared Brown's "new name" for *urtica* and Dümmer's next immortal discovery about *grossulariata*.

I have not nearly exhausted the topic, but will not take up more space at the present time. I hope to return to the subject again, and shall be glad to find, in the meanwhile, that some of your other correspondents feel an interest in it.

Temple: May 12th, 1871.

DESCRIPTION OF A NEW SPECIES OF RUTELIDÆ.

BY CHAS. O. WATERHOUSE.

PLUSIOTIS MARGINATUS, sp. nov.

Oblongus, ovatus, laevis, nitidus, suprâ viridis, flavo-micans, subtus viridi-æneus; clypeo antice rotundato, crebre punctulato, margine cupreo; thorace subtiliter punctulato, margine cupreo-micanti; scutello laevi; elytris parce indistincte punctulatis, leviter bistriatis, marginibus deflexis, argenteo-æneis, nitidissimis; metasterno (mesosterno conjuncto) inter coxas intermedias fortiter producto; labro, tibiis extus, tarsorumque articulo quinto purpurascens; antennis fuscis. ♀.

Long. lin. 12 : lat. lin. 6.

The bright apple-green colouring, and the burnished silvery margin to the elytra will at once distinguish this insect from any of the hitherto described species of its genus.

The head is sparingly but distinctly punctured on the crown, thickly punctured on the clypeus; the extreme margin and under-side of this latter, the canthus, the basal joint of the antennæ, and the apex of the mandibles are coppery. The thorax is sparingly and indistinctly punctured, the sides are slightly angular, the extreme lateral margins are thickened and coppery.

The elytra are narrowest at the base, gradually becoming broader to the apical two-thirds and then slightly narrowed, with the apex bluntly rounded. The margins are deflexed, especially at the apex, the deflexed portion bright, silvery æneous; the extreme margin at the base incrassate and slightly reflexed, the reflexed portion coppery. The under side is brassy-green with greyish reflections; the central part of the metasternum with rose-coloured reflections. The prosternal process is broad and slightly concave. The four basal joints of the tarsi are very short.

Habitat, Chiriqui.

In the British Museum, and also in the collection of Mr. H. W. Bates.

British Museum, *May 12th*, 1871.

ADDITIONS TO THE LEPIDOPTERA OF IRELAND.

BY EDWIN BIRCHALL.

The following 30 species have been observed since the publication of my list of the Lepidoptera of Ireland in Vol. iii of this Magazine:—

VANESSA C-ALBUM—Powerscourt.

SYRICHTHUS ALVEOLUS—Galway.

SESIA PHILANTHIFORMIS—Howth.

LITHOSIA COMPLANA—do.

BOMBYX QUERCÛS—Westmeath and Cork.

CABERA ROTUNDARIA—Dublin.

EUPITHECIA PIMPINELLATA—Dublin.

PHIBALAPTERYX LAPIDATA—Donegal.

ACRONYCTA MENYANTHEDIS—do.

NONAGRIA LUTOSA—Westmeath.

APAMEA OPHIOGRAMMA—Westmeath. Included in my original list on the authority of a specimen of unknown origin.

DIANTHÆCIA CÆSIA—Waterford. The Irish specimens closely resemble those from the Isle of Man.

- EPUNDA NIGRA—Donegal.
 CIRRHÆDIA XERAMPELINA—Down.
 HELIOTHIS MARGINATA—Galway.
 PLUSIA INTERROGATIONIS—Westmeath.
 PHYCIS SUBORNATELLA—Howth.
 SCOPARIA TRUNCICOLELLA—Donegal.
 HALIAS QUERCANA—Galway.
 PERONEA HASTIANA—Westmeath.
 „ MACCANA—Donegal.
 PENTHINA GENTIANANA—Wicklow.
 COCCYX SPLENDIDULANA—Limerick.
 EUPECILIA NANA—Wicklow.
 TINEA LAPELLA—Westmeath.
 ADELA CUPRELLA— do.
 ELACHISTA COLLITELLA—Howth.
 „ CONSORTELLA—Howth.
 BUTALIS FUSCOCUPREA— do.
 TALÆPORIA PUBICORNIS— do.

I shall be very much obliged by the communication of any omissions, or of fresh localities for any species.

The foregoing list, short as it is, contains several species which in Great Britain are nearly confined to the northern portion of the island, viz., *A. menyanthedis*, *E. nigra*, *P. interrogationis*, *P. lapidata*, *P. maccana*, indicating the probable direction of a stream of migration into Ireland; and considering the short distance which separates the coasts of Ireland and Scotland (little more than ten miles at one point), it is probable an interchange of species is still in progress, and a careful investigation of the northern shores of Ireland is much to be desired. The recent occurrence of *Phibalapteryx lapidata*, an insect hitherto only known to us as a native of the extreme North of Scotland, is an earnest of the discoveries which I have little doubt would result.

May I also earnestly request Irish collectors to be on the look out for *Argynnis Selene* and *Euphrosyne* and *Erebia Blandina*? I cannot doubt that these three butterflies are natives of Ireland, although yet unobserved; *Blandina* especially, which occurs in boundless profusion on the Argyleshire coast, will surely be found disporting itself on the upland bogs and loch sides of Antrim and Donegal next August.

But I go further.—The collector who has the good fortune to spend the summer amidst the mountains of the north-west of Ireland ought not to rest satisfied with the addition of *Blandina* to the Irish

list; this unexplored district is not at all unlikely to contain butterflies of the genus *Erebia* entirely new to us. Nearly 20 species of this genus are found in the Alps, and six or eight in Scandinavia, whilst in the intermediate British Islands hitherto only two have been observed.

The extremely local character of many of these insects is an excuse for their non-discovery by chance summer visitors; but, now that we have at least *two* entomologists in the north-west of Ireland, better must be done,—or I shall have to name them!

Leeds, April 18th, 1871.

ON *GEOTRUPES VERNALIS*, LINN., AND ITS ALLIES.

BY D. SHARP, M.B.

In his classification of *Geotrupes*, M. Jekel gives, as belonging to his division *Sternotrupes*, six species, viz., 1, *vernalis*, Linn., 2, *alpinus*, Sturm, 3, *pyrenæus*, Charp., 4, *Amedei*, Fairm., 5, *corruscans*, Chev., 6, *purpureus*, Küst.; but he adds a note, saying, “les espèces de ce dernier groupe, souvent contestés par les auteurs, réclament une révision sérieuse!”

I have examined my specimens of this group, and the descriptions of authors as carefully as I am able, and have come to the conclusion that five, and probably the whole six, of the species given by Jekel, must be reduced to two; and I feel so much confidence in this opinion, that I venture to bring it before the entomological public: more particularly does it seem to me that I am justified in doing this, as these two species are generally mixed together in collections, even where some of their varieties are separated as distinct.

These two species are 1, *G. vernalis*, Linn., very variable in colour, size, and sculpture, and liable to assume peculiar forms, especially in mountainous districts; and 2, *G. pyrenæus*, Charp., of which there are also two or three well-marked races. I will briefly allude to the characters by which these two species are distinguished, give a sketch of the variations they present, and conclude with the description of a third species of the division from the Caucasus district.

If a specimen of *G. pyrenæus* be compared with an ordinary individual of *G. vernalis*, it will be seen that *G. pyrenæus* is much more brilliant, smooth, and shining, that it is narrower in proportion to its length, and that its thorax is visibly punctured only at the sides, while that of *G. vernalis* is densely covered with large and small punctures; in like manner the under-surface of the hind body (abdomen) is densely punctured over its whole surface in *vernalis*, and impunctate and shining

in the middle in *pyrenæus*; moreover, if the specimens so compared be males, it will be noticed that the teeth on the under-surface of the anterior tibiæ are eight in number in *vernalis*, and five, or perhaps six, in *pyrenæus*; to these points it should be added that the hinder angles of the thorax are more obtuse and rounded in *vernalis* than in *pyrenæus*. The character derived from the sculpture of the thorax is liable to be diminished to a great extent in some of the varieties of *vernalis*, and the abdominal punctuation also varies somewhat in the different races of *pyrenæus*; nevertheless, the characters given, when once thoroughly seized, separate the two species clearly and decisively.

The variations of *G. vernalis* are very great. In the Alps and Pyrenees occurs a small dark coloured variety, in which the sculpture of the elytra is well marked, and the teeth of the male tibiæ are nine or ten in number; this is the *G. alpinus* of Hagenbach and Erichson. From Carinthia I have a small black variety, with the punctuation of the thorax much diminished. In the Alps there occurs a very brilliant and beautifully coloured green variety, *G. autumnalis*, Ziegl. From Trebizond I have two varieties, one a small, dull, bluish-green individual, with the thorax very densely punctured, and the elytra with raised marks, somewhat resembling blisters; the other a larger, black individual, with its thorax much more finely and sparingly punctured. Besides these varieties, less marked ones are found in various parts of the plains of Europe.

I have not seen a specimen of *G. purpureus*, Küst. (from Turkey); but, from the description, I entertain no doubt that it is a variety of *G. vernalis*. *G. Amedei*, Fairm. (also from Turkey) I have not seen, but I consider it probably another variety of *vernalis*; the synonymy is

G. vernalis, Linn.

lævis, Steph.

v. autumnalis (Ziegl.) Er.

v. alpinus, Hag.

v. obscurus, Muls.

v. violaceus, Muls.

v. varians, Muls.

v. splendens, Muls.

? *v. purpureus*, Küst.

? ? *v. Amedei*, Fairm.

This species occurs throughout Europe (even in Sweden and Scotland).

Now, as to the forms of *G. pyrenæus*. The ordinary form varies greatly in its secondary male characters. Generally, there is a tubercle

on the anterior femora of the male ; of this, however, there is sometimes no trace : the posterior femora are furnished behind with a row of irregular teeth, and these, in some males, have entirely disappeared ; the size varies greatly (length 5 to 9 lines), and the colour is black, or black with green or blue reflections.

G. corruscans, Chev., is distinguished from *pyrenæus* by its brilliant purple golden colour, and by the abdominal punctuation being greater ; the colour, however, is toned down in some individuals to a dull brassy tint ; and the abdominal punctuation is scarcely greater than in *ordipyrenæus* ; the thorax is sometimes a little shorter than in some individuals of *pyrenæus*, but in others it is quite as long ; this form is confined to the mountains of Spain, and it appears to me to possess no characters by which it can be distinguished as a species from *G. pyrenæus*. I have a series before me from the Guadarrama, and another from Galicia ; these do not quite agree, the Guadarrama individuals being of a more purple and beautiful colour than those from Galicia.

In the "Insecten Deutschlands," Erichson mentions, under the name of *G. splendens*, Zieg., a variety from Italy, which should be referred I think to *G. pyrenæus* ; but I am not sure of this, as Erichson regarded *corruscans* as distinct from *vernalis*, but placed *splendens* as a var. of *vernalis* ; the characters, however, that he gives for *splendens* are much the same as those he gives for *corruscans*. The synonymy is

G. pyrenæus, Charp.

vernalis, Steph.

politus, Muls.

v. corruscans, Chev.

? *v. splendens*, Zieg.

This species appears to be less widely distributed than *vernalis*, and also more local. It occurs in England (but not in Scotland or Sweden), in France, the Pyrenees, and the Asturias, and (as *corruscans*, Chev.) in other parts of Spain.

I have received from M. Deyrolle, under the name of *G. molestus*, Fald., a *Sternotrupes* closely allied to the two species now under consideration, but I think really distinct. The *G. molestus* of Falderman is, however, according to Jekel, an *Anoplotrupes* ; and in this case the insect from M. Deyrolle requires description.

G. (Sternotrupes) caucasicus, nov. spec.

Oblongo-ovalis, suprà niger, nitidus, prothoracis elytrorumque marginibus metallescentibus, subtus viridi-cæruleo-micans ; suprà lævis (capite prothoracisque margine externo exceptis) ; subtus abdomine confertim æqualiter punctato.

Long. 7½ lin., lat. 4 lin.

Mas., tibiis anticis dente apicali emarginato, subtus denticulis 7 instructis; femoribus posticis margine posteriore irregulariter serrato.

Femina latet.

Habitat, Persath (T. Deyrolle).

This species is narrower (the elytra especially being narrower in comparison with the thorax), more elongate, and more parallel than *G. pyrenæus*; it has the sculpture of the upper surface less marked, while that of the hind-body beneath is dense throughout, as in true *vernalis*. With *vernalis*, however, it cannot be confounded on account of its form, its impunctate upper surface, and the rather less rounded posterior angles of its thorax. Though I have seen only one (male) individual, I entertain no doubt of its being a distinct species.

Thornhill, Dumfries: May 4th, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 4).

BY H. W. BATES, F. Z. S.

TACHYS DIMINUTUS, n. sp.—*T. platytero formâ simillimus, multo minor; rufo-testaceus, thorace transverso, lateribus antice rotundatis, postice paulo angustato, angulis posticis paululum productis, acutis, margine basali utrinque obliquo, supra lineâ dorsali postice haud in foveam desinenti, sulco transverso basali profundo; elytris vix convexis, striis 1—2 solum distinctis, leviter impressis, impunctatis, disco puncto unico setigero.*

Long. $\frac{2}{3}$ lin. 2 exempl.

Santarem, Amazons.

TACHYS CYCLODERUS, n. sp.—*Vix convexus, piceus, sericeo-nitens, antenn. articulo basali, partibus oris pedibusque flavo-testaceis; thorace elytris multo angustiori, lateribus usque ad marginem basalem regulariter rotundatis, curvatura solum angulo postico paululum producto interrupta; elytris levibus, stria suturali impunctata solum distincta, disco puncto unico setigero, apice rufescentibus.*

Long. $1\frac{1}{4}$ lin. 2 exempl.

Rio Janeiro.

TACHYS SUBANGULATUS, n. sp.—*T. cylcodero colore simillimus, differt thoracis forma; piceus, nitidus, pedibus croceis, antennis orisque partibus rufo-testaceis; thorace elytris multo angustiori, prope angulos anticos latiori, deinde postice recte paulo angustato, angulis posticis obtusis, haud productis, margine basali pone angulos valde obliquo, sulco basali curvato; elytris striis 1—2 distincte impressis, alteris vix perspicuis, disco puncto unico setigero.*

Long. 1 lin. 2 exempl.

Rio Janeiro.

TACHYS MONOSTICTUS, n. sp.—*T. dromiodi simillimus, sed dimidio minor; oblongus, depressus, flavo-testaceus, vertice nigro, elytris apud suturam*

et in medio indeterminate infuscatis, læte sericeis; antennis elongatis, articulis 2—6 leviter infuscatis; thorace valde transverso, angulis anticis nullis, rotundatis, postice modice angustato, angulis posticis obtusis, margine pone hos obliquo, supra sulco basali profundo; elytris striis 4 vel 5 distinctis, sed leviter impressis, interstitio 4^{to} disco puncto magno setigero. Long. 1 lin.

The elytra have a silky, iridescent gloss, and the striæ, although broad and distinct, are so shallow, that they are scarcely visible in certain lights.

Sandy margins of pools, R. Tapajos: abundant.

TACHYTA PARALLELA, n. sp.—*Oblonga, depressa, lateribus parallelis, rufo-testacea, vertice elytrisq. obscurioribus, his apice macula magna, antennis pedibusque flavo-testaceis; thorace lato, transverso, antice elytris vix angustiori, postice paulo angustato, margine laterali late explanato, reflexo; elytris parallelis, apice obtuse rotundatis, striis 3 vel 4 vix impressis.*

Long. 1 lin. 3 exempl.

Of more depressed form than the European *T. nina*, and distinguished by the flattened lateral borders of the thorax, which are turned upwards, so as to create the appearance of a groove separating them from the disc. The elytra are very obtusely rounded at the apex.

Ega, Upper Amazons: under bark of trees.

TACHYTA MELANIA, n. sp.—*Oblongo-ovata, depressa, nigra vix æneo tincta, antennis tibiis tarsisque piceo-testaceis; thorace quadrato, postice vix angustato, lateribus sub-rectis, angulis omnibus rectis, distinctis, margine laterali explanato-reflexo; elytris striis 3 leviter impressis, 2—3 valde abbreviatis, punctulatis, alteris indistinctis, stria 3^a bipunctata.* Long. 1 lin. 2 exempl.

Resembles the Venezuelan *T. marginicollis*, Schaum, but is without pale margins to the pro-thorax. The flattened margins of the thorax are separated from the disc by a distinct groove.

Rio Janeiro. From the collection of the late Rev. Hamlet Clark.

TACHYTA XANTHURA, n. sp.—*Depressa, æneo-picea, epistomate, partibus oris, antennis, pedibus, thoracis lateribus elytrorumque macula apicali fulvo-testaceis; thorace transversim quadrato, postice vix angustato, angulis posticis rectis, marginibus lateralibus explanatis, intus fortiter sulcatis; elytris striis 4 leviter impressis.*

Long. $\frac{5}{8}$ lin. 1 exempl.

Rio Janeiro. From the collection of the late Rev. Hamlet Clark. The thorax is very similar in form to that of *T. melania*, having the sides nearly straight to the well-marked posterior angles, but the flattened borders are pale fulvo-testaceous, like the legs, antennæ, anterior part of the head, and apex of the elytra.

TACHYTA CRUCIGERA, n. sp.—*Depressa, picea, epistomate, partibus oris, antennis, pedibus, thoracis lateribus et elytris fulvo-testaceis, his*

sutura fasciæque mediana piceis; thorace transversim quadrato, postice vix angustato, angulis posticis rectis, marginibus lateralibus explanatis, intus sulcatis; elytris striis 3 vel 4 leviter impressis.

Long. $\frac{5}{8}$ lin. 2 exempl.

Rio Janeiro. Nearly allied to *T. xanthura*, and, notwithstanding the difference in coloration, possibly only a variety. My two specimens differ greatly in the distinctness of the elytral striæ, and I suspect this character is variable in the whole of the group. The cruciform mark of the elytra is of a reddish-piceous hue, and ill-defined from the pale tawny ground colour.

TACHYTA LIVIDA, n. sp.—*Elongata, angusta, depressa, livido-testacea, nitida, capite marginibusque elytrorum paulo obscurioribus; antennis brevissimis, articulo basali flavo-testaceo, reliquis obscuris; thorace breviter cordato, lateribus antice valde rotundatis, postice fortiter sinuatim angustatis, angulis posticis productis, rectis; elytris elongatis, parallelis, stria suturali solum distincte impressa, disco punctis duobus setigeris, striola recurva lata haud profunde impressa.*

Long. $\frac{1}{2}$ lin. 4 exempl.

Adelaide, S. Australia. From Mr. J. Odewahn. A curious species, distinguished by its elongate, narrow, parallel form.

OBS. (1) The following species of *Tachys* are omitted or wrongly placed in Gemminger and Harold's catalogue :

Tachys monochrous, Schaum, Berl. Ent. Zeit. 1863, p. 90... Melbourne.

„ *ornatus*, Apetz, de Col. O. et A. Brehm leg., &c.,
1854 Upper Egypt.

Bembidium id., Gemm. et Harold Cat.

OBS. (2) *Tachys æneopiceus*, Bates, E. M. Mag., vol. vii. I should have mentioned, in the description, that this species has the closest possible resemblance to *Pericompsus metallicus*; the absence of a sixth dorsal striæ, which excludes it from *Pericompsus*, furnishing the sole definite distinction.

OOPTERUS (group Trechinæ) MACEYI, n. sp.—*O. clivinoide latior, multo minus convexus, fusco-cupreus, subnitidus, mandibulis, palpis basi et apice, antennis basi, pedibus, marginibusque elytrorum piceo-rufis; capite lævi, sulcis frontalibus latis, plicisque duabus utrinque prope oculum; thorace vix convexo, quadrato, postice sinuatim leviter angustato, angulis posticis productis, acutis, basi utrinque bifoveolato et punctato; elytris ellipticis, modice convexis, striis punctatis, leviter impressis, interstitio 3^{io} quadripunctato; tibis, præsertim anticis, infuscatis.*

Long. $2\frac{1}{2}$ —3 lin. ♂ ♀.

The general colour varies from pitchy-brown to dullish æneous and violaceous-coppery ; the external and deflexed margins of the elytra, and often also the posterior angles and margin of the thorax, being reddish. The form of the thorax is not at all cordate, as in *O. clivinoide*, but is quadrate, a little rounded on the sides anteriorly, and moderately and gradually sinuate-angustate posteriorly.

Specimens of *O. Maceyi* have been submitted to M. Putzeys, who informs me that it is distinct from all other species.

I received large numbers of this insect, through the kindness of Mr. Coleman, from Capt. Macey, who obtained them in the Falkland Islands, together with a few specimens of *Trechus antarcticus*, and a large series of *Antarctica blanda* and *malachitica*.

OOPTERUS LÆVICOLLIS, n. sp.—*O. clivinoide* latior, multo minus convexo, thorace nequaquam cordato; nigro-subæneus, labro, palpis, antennis, pedibus elytrorumque margine deflexo rufo-piceis; capite suleis frontalibus vix impressis, brevibus; thorace quadrato, lateribus medio rotundatis, antice et postice (haud sinuatum) leviter angustato, angulis posticis subrectis, supra, lævi basi utrinque bifoveolato, foveis haud distincte punctatis; elytris ellipticis, punctato-striatis, interstitio 3^{io} quadripunctato.

Long. $2\frac{3}{4}$ lin. ♂.

New Zealand, Very closely allied to the Falkland Island species above described; differing chiefly in the thorax being more rounded in the middle, and in the palpi and antennæ being entirely of a reddish colour. The impunctate foveæ of the thorax and distinctly impressed elytral striæ distinguish it from *O. rotundicollis*, White.

The genus *Oopterus* is a purely Antarctic form, and the species, closely allied to each other, are found in New Zealand, the Auckland Islands, Soledad Island, and the Falkland Islands. This distribution, over lands separated by such wide expanses of ocean, is the more remarkable as the species are apterous, as well as purely terrestrial in their habits. The genus belongs to the *Trechini* group. The sutural stria is continued round the apical margin, but recurves only near the lateral margin, where it is separated from the sulcate sub-marginal stria by a raised line.

Kentish Town: May, 1871.

Note on Quedius brevicornis, Thoms., a species new to the British Fauna.—I have recently taken in Studley Park four specimens of a *Quedius*, which Mr. Rye thinks should be referred to *Q. brevicornis*, Thoms., already erroneously recorded as British, the insects on the authority of which it was added to our list being afterwards considered to be *Q. puncticollis*, Th. (for notes on this and allied species

of "red *fulgidus*" see Ent. Ann., 1869, pages 26—29). My specimens were found in and about the nest referred to in the next following notice, and in chips of wood placed near it so as to form traps.—E. A. WATERHOUSE, Fountain's Hall, Ripon, May, 1871.

Note on Coleoptera found in and about a bird's nest.—From an old beech tree, lately blown down in Studley Park, I may, in addition to the *Quedius* above mentioned, enumerate the following insects as being worthy of note; they were found in an old nest (I believe a starling's, but possibly a jackdaw's), and in the rotten wood just surrounding it: *Abræus globosus* and *Quedius scitus* (several); *Scydmaenus rubicundus* (one); *S. exilis* (three or four); *Choleva colonoides* (several); *Trox scaber*, &c.

In the decayed wood of the same tree *Quedius scitus* was to be had for the the working; I usually obtained one for every twenty minutes' chopping. *Thymalus limbatus* also occurred; *Cerylon histeroideus* was not uncommon, and *Cis bidentatus* abundant.

I also found a few *Euplectus Karstenii*, in most of which the head was much wider, and apparently more coarsely punctured, than is the case with that species usually, as far as my experience goes; and from the chips above mentioned I secured one specimen of *Batrachus venustus* (there was no trace of any ants in the tree).—ID.

Note on a variety of Deleaster dichrous.—Two specimens of this insect, kindly sent to me from Scarborough by Mr. R. Lawson, are to be referred to the var. *adustus* of Bielz (in Küster's "Die Käfer Europa's," vii, 48, 1846), which, as Kraatz notes in Ins. Deutschl., iii, 902, is probably identical with *D. Erichsonii*, Hochhuth (Bull. Mosc., 1851, I. 24, P. 2, 57). To this form also, and not to the type, must be attributed the *Lesteva Leachii* of Curtis, Stephens, and the "Entomologia Edinensis." It differs *primo visû* from the type in having the elytra infusate at the apex, instead of unicolorous; the antennæ also seem to be a trifle shorter, and the polished elevation of the vertex seems in my insects more limited, and more evidently punctured on the sides. Bielz appears to have fancied a difference in the shape of the scutellum, but Redtenbacher failed to see this in his insect, and it certainly does not appear in the specimens above noted. Kraatz notes it from Glatz, Bonn, and Munich; and it is somewhat strange that none of the many southern English examples seen by me should be of this form; whereas every north-British specimen seems to belong to it. Dr. Sharp some time ago directed my attention to this form from Scotland; and I am induced to notice it now, as it has escaped record, and as it appears also to occur in England.—E. C. RYE, 10, Lower Park Fields, Putney, S.W., May, 1871.

Note on Chrysomela distinguenda.—This beetle occurs in a field close to my house, but does not appear to be widely distributed. One was brought home by my little boy last spring. This year five or six specimens have been found.—R. G. KEELEY, 2, Croham Road, Croydon, 4th May, 1871.

Tettix Schrankii, Fieb., an Orthopteron new to the British lists.—On examining recently a few Orthoptera that I have picked up from time to time during the

last two or three years, I detected several specimens of the above; and, as I have not been able to find (or hear of) any notice of its capture in Britain, I conclude that it has not been previously placed on our lists. In this opinion I am supported by one of the few British entomologists who study *Orthoptera*, Mr. J. C. Dale, of Glanville's Wootton.

Of the four European species of the genus *Tettix*, Charp. (*Acrydium*, F., Stephens), described by D. Fischer, three have been found in Britain,—*T. subulata*, *bipunctata*, and *Schrankii*, the subject of this notice.

For the benefit of collectors, I give from "*Orthoptera Europæ*" the distinctive characters of each species.

1. *T. subulata*, L. (*Acrydium subulatum*, Stephens, Curtis). Vertex sub-angular or sub-truncate in front: the hind process of the pronotum produced *for beyond the apex of the femora of the hind legs*, acuminate and subulate at the extremity; hind margin of the side lobes of the thorax, *two-lobed*; superior keels of the hind femora *incised before the knee*; genital valves of the ♀ scabrous and denticulate. Varies much in colour, being fuscous, pale, or variegated. *T. subulata* is found throughout Europe. I have not seen any Scottish specimens, but have examined an English specimen sent by Mr. Dale.

2. *T. bipunctata*, L. (*Acrydium bipunctatum*, Stephens; *pinnula*, Curtis; *nigricans*, Sowerby). Vertex sub-angular; hind process of the pronotum variable in length, *but never longer than the apex of the hind femora*; side lobes of the thorax deflexed and *bisinate*; superior keel of the hind femora *incised before the knee*; valves of the ♀ denticulate, pilose. Size and colour more variable even than in *T. subulata*; fuscous or variegated, often spotted with black behind the shoulders. Occurs throughout Europe. I have taken specimens in Ross-shire, Inverness-shire, and Kirkcudbrightshire, and have English examples from Mr. Dale.

3. *T. Schrankii*, Fieb. Vertex sub-angular in front; hind process of the pronotum *not longer than the abdomen*, narrowed behind; side lobes of the thorax deflexed, *one-lobed*; superior keel of the hind femora *not incised before the knee*; valves of the ♀ very finely serrulate. The smallest of the European species, and probably often passed over as the larva of *T. bipunctata*. As variable, or more so, than the others, in both size and colour; fuscous, reddish-fuscous or variegated, often with black spots behind the shoulders. Has occurred in various parts of Europe, and is, perhaps, found throughout. Inhabits moors and edges of fields, from early spring till the end of October. I have met with a few specimens in Ross-shire, Inverness-shire and Kirkcudbrightshire, and have also seen one taken by Mr. J. Allen Harker, in the West of Scotland.—F. BUCHANAN WHITE, Perth, April, 1871.

Nyssia lapponaria, Boisduval.—In our last number (vol. vii, p. 282) the occurrence of a specimen of this insect in Perthshire is recorded. The occurrence of its close ally, *N. pomonaria*, Hübner, would never surprise us; indeed, Guenée refers without hesitation an insect figured by Albin to that species, and certainly a comparison of the figure of the larva by Albin, and that of *N. pomonaria* by Hübner, favours the correctness of Guenée's assumption. Unfortunately, Albin gives us no locality for his insect; possibly, if captured anywhere near London (prior to 1720) the locality has long since been covered with bricks and mortar. Albin's account of his insect, pl. 97, figs. a, b, c, d, is as follows:

"The caterpillar, *a*, was a kind of *looper*, it was hairy (which is not very common among them), and beautifully marked with several colours. It was found on the hazel the 1st of June, and the 14th of the same month it went into the ground, and changed into a chrysalis, *b*, and at the beginning of April came the moth, *c*, *d*."

Nyssia pomonaria occurs in Germany, central and eastern France, and in Sweden, &c.; is rather scarce; and, according to Guenée, is not easily reared.

Lefebvre, in the *Annales de la Société Ent. de France*, 1835 (not 1833, as printed by Guenée and Standinger), p. 101, describes *N. pomonaria* under the new name of *N. vertumnaria*; retaining the name *pomonaria* for a closely allied species under the assumption that it was the *pomonaria* of Linné (an error endorsed with perfect faith by Herrich-Schäffer, albeit Linné has no *pomonaria*): to this *pomonaria* of Lefebvre, Boisduval gave in 1840 the name *lapponaria*; and, notwithstanding the characters of the two insects, well pointed out by Lefebvre, it is still a question with some more recent writers whether *lapponaria* is specifically distinct from *pomonaria*, or whether it is only a northern and Alpine form of that species.

Lapponaria should be distinguished from *pomonaria* by its smaller size, by the cilia of the anterior wings being uniform in colour and not checkered, by the abdomen bearing above a central orange streak, and by the legs being entirely black, with no white annulations.—EDS.

Occurrence of Danais Archippus in Queensland.—The sudden appearance this season, and for the first time, of this fine insect in Queensland, has caused much speculation among our local entomologists. What seems most extraordinary, is the fact of its appearance in such large numbers, and its being so widely distributed. I cannot ascertain that a single specimen was observed last season, or ever before in the colony. As many as 30, at least, have been taken, to my knowledge, in Brisbane; and I have lately seen a specimen sent from Rockingham Bay, about 1,500 miles north of Brisbane. The insect haunts localities infested by *Asclepias curassavica* (an introduced plant, but now growing wild in all parts of the bush), upon which the larva evidently feeds.—W. H. MISKIN, Brisbane, 21st February, 1871.

[*Danais Archippus* is an American species, as is also *Asclepias curassavica*. We have made enquiries concerning the sudden appearance of this butterfly in Australia. Mr. A. G. Butler informs us that he has seen examples from one of the South Sea Islands (*vide* *Annals and Mag. Nat. Hist.*, May, 1870); and that Mr. Godman found it in the Azores. Mr. Bentham advises us that the *Asclepias* is completely naturalized in many parts of Asia and Africa as well as in Australia. The occurrence in Queensland tends to the belief that the insect may have gradually made its way across the Pacific from Western America; but its sudden appearance in such numbers has yet to be accounted for.—EDS.]

Tæniocampa leucographa, &c., near York.—During the last week I have taken a fine series each of *T. leucographa* and *T. opima*, at sallows, in this district; the former is very rarely taken with us. The night of March 25th was very mild; the glowworms were shining quite commonly. I took that evening upwards of 100 specimens of *Pachnobia piniperda* amongst other species at sallows.—JOHN T. CARRINGTON, 31, Holgate Road, York, April 17th, 1871.

Abundance of larvæ at Sheerness.—The hedges in this neighbourhood are infested with the larvæ of *Porthesia chrysorrhæa*. At the present time they are half-grown, and the amount of mischief already occasioned is most apparent; when they are full-fed, there will be hardly a leaf left, as they seem to attack almost every plant, although giving a preference to sloe and white-thorn. Besides this species, the larvæ of *Bombyx neustria* are just hatching, and promise to be nearly as plentiful. In addition to the trees preyed upon by *chrysorrhæa*, I observe these larvæ exhibit a partiality for standard roses and every variety of fruit tree. On one small rose bush, I yesterday counted no less than seven broods; these were only a few days old, and each brood might easily be picked off and destroyed; but I doubt if the gardeners about here are wide enough awake to look to this. The young larvæ of *Leucoma salicis* are now appearing on the poplars in the Dockyard in vast numbers. It seems we are going to have a favourable year for larvæ of all kinds. It is strange that last summer I noticed but few of *chrysorrhæa*, and only one or two perfect insects; but *neustria* was abundant enough.—GERVASE F. MATHEW, R.N., Royal Naval Barracks, Sheerness, May 17th, 1871.

Early appearance of Acronycta aceris.—Notwithstanding the cold easterly winds we have had for the past fortnight, I observed this species on the 11th inst., a day earlier than last year; and, from its rubbed appearance, I imagine it had been out several days. On the 15th, and again on the 16th, what I believe to be the same specimen was sitting on a block of granite within a few yards of the place where I observed it on the 11th. I conclude it is an unimpregnated female, or that the cold nights prevented its moving. I have not been to see whether it is there to-day.—ID.

Natural history of Phibalapteryx lignata.—As long ago as September 5th, 1862, I had eggs of this species from Mr. Fenn; but, through ignorance of any suitable food-plant, could do nothing with the larvæ. Again, on July 8th, 1863, I had eggs from Mr. Birks, and managed to keep a larva or two alive for some time on *Galium mollugo* and *Clematis flammula*, but could not bring them to full growth. During the past season, however, I have been much more successful, thanks to Messrs. Barrett, Birks, and Carrington, to whom I am indebted for supplies of eggs, and information concerning the imago.

The natural food-plant is probably *Galium palustre*, which I am told grows in the habitat of the moth, for I have found the larvæ thrive well on *G. saxatile*, although, as shewn above, *mollugo* did not suit them; but this is a point of taste in which this species is not singular, for I have known some three or four others, which would change about from *Galium verum* to *saxatile*, and *vice versâ*, but would not go so far as to include *mollugo* in their bill of fare.

It appears certain that there are two flights of the moth; the first consisting of larger and finer individuals, and lasting from the end of May to some time in July; and the second of more stunted growth, on the wing some time about the end of August.

This second brood may be only partial, and may depend more or less on the character of the summer; but, whatever be the extent of it, it must be found constantly in different localities. The date given above for eggs, September 5th, points to a second brood, and Mr. Carrington, from the experience of former years, made sure of getting eggs a second time last season, and sent me some on August 29th.

The dates of the transformations observed by me last year are as follows :— Mr. Birks sent me eggs, which arrived in the shape of young larvæ, on July 18th ; they fed up very rapidly, and began to spin on August 5th ; and on the 20th I bred several moths ; these I could not get to pair, so Mr. Carrington, as mentioned above, forwarded eggs on August 29th ; the larvæ hatched on September 3rd, but, owing to my inability to supply them with fresh food in sufficient quantity (for *Galium saxatile* is not plentiful here), dwindled away, and died ; and I thus lost the opportunity of deciding whether hybernation takes place in the pupal or in the larval stage.

The egg is bluntly oval in outline, flattened, and with a shallow depression on the upper surface, pitted very shallowly all over ; in colour pale yellowish, turning leaden at last. The newly-hatched larva is noticeably slender, dusky-olive in colour, with brownish head.

For a time it remains of a dusky, pale green, but before long dons a more decided dress, dark green above, and pale green below. When about half-grown, the ground-colour is dull greyish-green, with a dull, dark green (almost blackish) fine dorsal line, a fine sub-dorsal line, and two stouter brownish-green lines just above the spiracles ; belly of the ground colour, with central and two side-lines running through it, faint, except at the folds, where they show as strong purplish-brown dashes ; at this stage it is altogether duller looking than when full-grown.

When full-grown, the length barely three-quarters of an inch, the figure cylindrical, tapering slightly and gradually from the tenth segment to the head, which is as wide as the second segment ; the skin smooth.

The ground colour a yellowish-green, that on the hinder segments being of a more tender tint than the rest ; the back, from segments 4 to 9, both inclusive, more or less suffused with dull brownish-pink ; the head green with brownish bristles ; the second segment full green, the third dull green, the dorsal line of a deeper tint of whatever colour it passes through, pink through the pink, and greenish after the ninth segment, and thickening almost into a narrow diamond as it passes each fold ; the sub-dorsal line is pale, often edged above and below with a fine dark thread, the upper edging having a blackish dash at the beginning of each segment : the rest of the side is divided by a faint, pale line into two halves, of which the upper is of the same colour as the back, and the lower decidedly darker, and on its lower edge, at the beginning of each segment, is a black or blackish dash ; the spiracles are reddish, and beneath them runs a pale reddish stripe ; the belly is of the ground colour.

In some specimens the pink suffusion of the back is confined to the five folds between segments 4 to 9, and is softer in tint, and leaves the centre of these segments of a tender green ; the lines and dashes as above, but fainter. In others the pink may be called purplish ; all have the ventral prolegs tinged with purplish-brown, and with a dark dash down them. In some, again, a darker green takes the place of the pink dorsal suffusion. But in any case the full-grown larva has a soft delicate look.

Many of my larvæ spun among their food, others just under the soil, making a weak cocoon with a few silken threads. The pupa is short and cylindrical in figure, the eyes prominent, the abdomen short, the tail covered with the cast larva-skin ; the skin polished, the back dark brown, the wing cases, antennæ, and belly of abdomen bronzy-green.—J. HELLINS, Exeter, 21st February, 1871.

Natural History of Dasysdia obfuscata.—The eggs of this species were kindly forwarded to Mr. Buckler by Dr. F. Buchanan White in July, 1869. Mr. Buckler took notes of the egg-state, and of the young larvæ till hibernation commenced, and from that period handed them over to me.

The larvæ were hatched during August, and the early part of September, fed readily upon *Calluna vulgaris*, and just as readily on *Polygonum aviculare*, attained the length of rather more than a quarter inch before hibernation, near the end of October; began feeding again towards the end of March, 1870; moulted sometime during the first fortnight of April, and again in May, and by the end of June the most advanced were full fed, but they did not all keep pace together.

The moths appeared from August 17th to September 5th.

The egg is shortish-oval in outline, flattened; the shell ribbed with lines of fine beads; the colour at first yellowish-white, changing in a few days to salmon, and again, shortly before hatching, to bluish-grey, the ribs, however, showing white to the last. Judging from those sent by Dr. White, the eggs appear to be laid in little groups of two or three or even more together, and to be set up on end, on the sprays of heather.

On hatching, the young larva makes its escape from the top of the egg-shell, and even at this early age has—for a *Geometer*—a stout figure; its colour is pale leaden-grey, with a paler sub-dorsal line, which is bordered below with a darker grey stripe; the head blackish.

Just before hibernation, when of the length of rather more than a quarter inch, the larva is very rugose; its colour is now a dingy blackish-brown on the back and sides, with a broad, sub-spiracular stripe of reddish or violet-grey, intersected by a blackish line; the head blackish, with a grey spot on the crown of each lobe; an indistinct, dark, dorsal stripe, edged with fine grey lines; the tubercular raised warts grey, the dorsal pair on the twelfth segment being more prominently raised than any of the others.

As the larva grows it becomes lighter in colour, and when full-fed may be described as follows:—length not quite an inch, figure very stout and stiff, cylindrical in the middle, slightly flattened at the extremities; the spiracular region forming a puckered ledge; head smaller than 2nd segment, and tucked in; legs short.

The ground colour grey, in some specimens becoming gradually paler behind; on the front segments a fine, double dorsal line, enclosing a whitish-grey thread, but afterwards this double line appears only as a small, elongated, spear-head in the middle of each segment; the sub-dorsal line is a fine waved pale thread, edged with black, and bearing thick, dark dashes at the beginning and end of the segments; the tubercular warts are whitish with dark rings, the dorsal pair on twelfth are placed close together, and, being more developed than the rest, stand up as obtuse points; the row of warts on 13th segment above the anal flap are very small, and black in colour; the spiracles are pale brown ringed with black, and are placed in a stripe of dark grey, with darker dashes at the folds, and some fine dark streaks, wavy and sloping upwards; this is followed by a line of whitish-grey, which melts into the grey or reddish-grey of the belly, the centre of which is buff, and bears a row of pairs of brown dashes down the middle, with five sets of curious, curved, pairs of streaks on either side at the folds between segments 5—10.

The stout, stiff figure of this larva, its short legs, and its sluggish habits, are all very congruous, but, as in former cases, I leave others to decide whether figure forms habits, or habits form figure.

The larva spins under the surface of the soil, but, owing to the death of most of my stock just when they had disappeared for this purpose, I am not able to say anything of the pupa or cocoon.

The "concave" outline of the costa of the fore-wings (v. Stainton's Manual, vol ii, p. 30), is very noticeable in the freshly-bred moths, as they rest with expanded wings; in the male the concavity is greater almost than that shown by *Hypana proboscidalis*, though, of course, the tip of the wing is rounded, and not at all falcate.—*Id.*, May 11th, 1871.

Description of the larva of Eremobia ochroleuca.—On the 22nd June, 1870, in striking at a specimen of *Lycana Alsus* in an old chalk-pit, I took in my net by chance a very delicate looking, active, *noctua* larva, which was quite a stranger to me: believing I had obtained it from *Anthyllis vulneraria*, I put some of this plant with the larva into a box; but, on looking at it late in the evening, I saw it had not eaten any of the vetch, and seemed eager to escape.

As I could remember nothing but grass besides the *Anthyllis* growing in the spot where it was taken, I went out in the twilight, and gathered a little of the first species of grass that came to hand, without noticing what it was.

Next morning I was very pleased to see that the larva had partaken freely of the grass; and having by me at this time, potted, a growing tuft of *Nardus stricta*—a species I had noted on the dry, grassy slopes where I had been the day before, I too hastily assumed this to be the proper food of my captive, and placed it thereon, securing it with a glass cylinder. As my attention at this time was fully taken up by many other larvæ, I forgot to look at my unknown for some days; and when I saw it again it was not the least grown, nor did it look well. This made me resort to other grasses, but without effect; and I had the mortification of seeing it, day by day, become smaller and feebler, till on the 2nd. July it died. But, before the breath was quite out of its shrunken body, my regrets were banished (thanks to Mr. W. H. Harwood, of Colchester), who sent me on July 1st a larva precisely similar in form and colour, but much larger in size; and, what was still better, feeding away hopefully on its proper food—the seeds in a panicle of cock's-foot grass—*Dactylis glomeratus*.

In order to make quite sure of this being its proper food, having gathered fresh panicles of this grass, as well as of two or three other kinds, and put them in with the larva; but I saw that it roamed over the other kinds till it found the seeds of the cock's-foot grass, and then attacked them ravenously, thus perfectly satisfying every doubt. On the 3rd of July it retired to earth; and on the 30th the perfect insect came forth.

This full-grown larva varied in no respect from that which I had myself taken, save in size, for it was twice as large. It was one inch-and-a-half in length, cylindrical, of moderate and uniform stoutness throughout, including the head, the lobes of which were rounded and full; the legs and prolegs all well developed.

Its ground colour a bright but very pale opaque whitish-green; the very broad dorsal stripe whitish, the sub-dorsal stripe similar, but a trifle less in breadth; between this and the spiracles the ground colour became a little deeper; was bor-

dered along the spiracles by a narrow stripe of full-deep green ; the sub-spiracular inflated stripe whitish ; the belly and legs of the ground colour, a trifle darker than the back. The head was also of the pale ground colour, with a blackish streak across the mouth, and was more polished than the surface of the body, though that was rather glossy ; the folds of the segmental divisions appeared white ; the spiracles were black, as well as all the tubercular dots, which were plainly visible in their usual situations, those on the back smaller than the others, and every one of them furnished with a fine whitish hair ; the anterior legs also spotted with black. —WM. BUCKLER, Emsworth, Nov. 25th, 1870.

Description of the larva of Acidalia trijeminata.—I am very much indebted for young larvæ of this species to the kindness of Mr. J. R. Wellman, who captured the parent moth on the 18th June, 1870. The eggs, Mr. Wellman informs me, were, as well as he can remember, of a pale pinkish colour, and much like those of *rusticata* ; they were laid loose in a box, and hatched in about ten days.

The young larvæ were supplied at first with a variety of food, including maple, birch, and knot-grass. In their infancy they appeared to feed on the two first-named ; but, when nearly half-grown, they fed entirely on *Polygonum aviculare* ; and on this plant I had the pleasure to make their acquaintance on the 28th of June, and continued to feed them with the same up to their pupation, which occurred July 22nd to 24th. One moth, a ♂, appeared on the 14th of August, the others remaining over the autumn and winter. Mr. Wellman, more fortunate, bred upwards of a dozen specimens, between the 3rd and 16th August.

The full-grown larva is about three-quarters of an inch in length, and, although its shape is really more cylindrical than flattened, the puffed spiracular region gives the appearance of a rather flattened form : its breadth is greatest at the ninth segment, from which it tapers, by degrees, both behind to the anal tip, and in front towards the head, which is the smallest segment ; it is very rugose, each segment being sub-divided into twelve portions by deep wrinkles ; the segmental divisions deeply cut, and much less in diameter than the segments themselves.

Its colour is a dingy deep brown, relieved along the spiracular ridge by an almost continuous streak of dirty pale ochreous, interrupted at the segmental divisions. On the back, as far as the beginning of the tenth segment, is a very faint, pale dorsal line, chiefly visible before and behind each segmental division, where it is palest, and set off by being bordered by thick black strokes ; from these, two blackish streaks diverge obliquely towards the sub-dorsal region, forming a kind of **Λ** mark pointing forwards on the anterior of the segment, the middle part of which is much suffused with dark brown ; the sub-dorsal line is also blackish but not continuous, being interrupted twice on each segment ; on the tenth segment there is a central, somewhat star-shaped, whitish spot, and the remaining posterior segments are brown, without any definite markings. The ventral surface is dark brown, and contrasts strongly with the pale spiracular ridge ; the head is shining brown. The larva of this species is further distinguished from those of its congeners, by having, from each of its wart-like tubercles, a rather long, dirty, ochreous bristle, curved forwards on all the segments as far as the tenth, but curved backwards on the other three ; these bristles have the extremity as thick as the base, and greatly resemble those on some species of *Caradrina*.

It is a very timid larva, contracting itself at the least alarm, and remaining a very long time afterwards without movement. Its usual position in repose is a close coil, with its head twisted round on one side, over the back of the tenth segment.—Id., Nov. 26th, 1870.

BRITISH HEMIPTERA. ADDITIONS AND CORRECTIONS.

BY J. W. DOUGLAS AND JOHN SCOTT.

Section 2.—COREINA.

Family 2.—CORIZIDÆ.

Genus 2.—CORIZUS, *Fallèn*.

CORIZUS ABUTILON.

Cimex Abutilon, Rossi, F. E., ii, 242, 1325 (1790).*Corizus Abutilon*, Sign., Ann. Soc. Ent. France, 3^me série, vol. vii, 77, 2 (1859), Stål, Oefvers. K. Vet. Ak., 208, 2 (1862).*Corizus substriatus*, Burm., Handb. ii, 306, 2 (1835).*Rhopalus Abutilon*, Fieb., Eur. Hem., 233, 2 (1861).

Above ochreous, shaded with fuscous or black punctures. *Antennæ*, first joint ochreous, above with black spots, beneath with a black line, fourth joint brown. *Scutellum*, apex rounded. *Elytra*, transparent, anterior margin posteriorly brownish and opaque. *Abdomen* above, black with an irregular A-shaped mark on the basal segments, and the whole of the sixth, except a vitta in the middle, stramineous: *connexivum* stramineous, with a black spot on each segment. *Under-side* pale ochreous, pilose.

Head: *crown* quadrate, coarsely punctured, in the middle, longitudinally, fuscous; behind the middle of each eye a short, black line extending to the base of the head: *face* with fine, short, projecting hairs, middle lobe punctured, side lobes scarcely punctured; antenniferous processes broad, exteriorly without punctures, angles sub-acute. *Antennæ*: first joint ochreous, above with a few irregular, black spots, beneath with a longitudinal black line; second and third ochreous, with a brownish tint, unspotted, the second a trifle longer than the third, the third with a very narrow, black ring at the base; fourth, pale brown, posteriorly ochreous, the extreme base enlarged and black. *Eyes* brown. *Ocelli* pale, with a brown spot.

Thorax: *pronotum* strongly punctured, except on the sides; on the disc the punctures fuscous, in irregular, longitudinal series, forming indistinct dark shades; the anterior ridge and the slight raised line down the middle smooth and pale; close behind the former near each side, a narrow, eye-shaped space defined by a surrounding black line. *Scutellum*, except on the middle line and sides, obscured by black punctures; the apex broadly rounded, the margin raised, pale, and smooth. *Elytra* longer than the abdomen, transparent, shining; *clavus* pustulate at the base, the inner margin gradually embrowned, till at the apex the colour ends in a brown dot; *corium*, nerves prominent, the intervals lightly crenate, anterior margin posteriorly brownish, opaque, within the margin throughout a row of black punctures. *Sternum*: sides of *meta-sternum* not projecting. *Legs* pale ochreous; *thighs* clear at the base, thence,

on the upper-side, with small, black spots in rows, confluent towards the apex; *tibiæ* with a few small, black spots, towards the apex on the inner side, in a row; *tarsi*, first joint at the apex, especially on the inner side, second at the extreme apex, third, on the posterior half, fuscous-black; *claws* black.

Abdomen : above black; in the middle of the basal segments an irregular **A**-formed mark, the posterior margin of the fifth segment, and the whole of the sixth (except a black, longitudinal vitta in the middle), stramineous; *connexivum* stramineous, a black spot at the posterior outer angle of each segment. *Under-side* pale ochreous, a small black spot, close to the stigmata, on each of the last three segments. Length, $3\frac{1}{2}$ lines.

A single ♀ taken by Mr. Champion at Deal, last July (see vol. vii, p. 208).

Fieber (l.c.) and Stål (l.c.) quote *Coreus magnicornis*, Fab., as synonymous with *Cimex Abutilon*, Rossi. Stål, however, in his latest work (*Hemiptera Fabriciana*, i, p. 69, 3, 1868), quotes instead *Coreus crassicornis* Fab., leaving it to be inferred that *C. crassicornis*, Lin., is a different species. Fieber, however, reckons *C. crassicornis*, Lin., and Fab. as the same, and a distinct species from *C. Abutilon*. *Coreus capitatus*, Panz., F. G., 92, 19, cited by Fieber and Stål, does not appear to us to represent our species; and their references to *Corizus magnicornis*, Bohem., and *Rhopalus magnicornis*, Sahlb., seem to want confirmation.

Section 5.—LIGÆINA.

Family 1.—RHYPAROCHROMIDÆ.

Genus SCOLOPOSTETHUS, Fieb.

SCOLOPOSTETHUS CRASSICORNIS, n. sp.

Ferruginous. *Head* and anterior two-thirds of *pronotum* fuscous or piceous-black; *antennæ* long, thick, black, first joint as long as the second, testaceous; *elytra* with a black band across the middle of the corium, extending on to the clavus, interrupted on the middle of the corium and by the claval suture; posterior margin of the corium black; *legs* testaceous.

Ferruginous. *Head* black, closely and finely yet roughly punctured, central lobe and antenniferous tubercles dark ferruginous; *antennæ* long, thick, black, delicately pilose, first joint very long, testaceous, second not longer, third nearly as long as the first, fourth shorter than the third, short fusiform, apex ferruginous; *rostrum* testaceous.

Thorax : *pronotum* narrow, sub-trapeziform, or rather sub-campanulate, the anterior angles rounded, the hinder margin not very much longer than the anterior, and the sides somewhat constricted in the middle; their ferruginous margin distinctly raised and reflexed throughout; disc closely, finely, yet roughly

punctured; anterior two-thirds, convex, black, anteriorly ferruginous, on the posterior part of this portion a large, central, sub-quadrate fovea: posterior third depressed, obscure ferruginous, the posterior margin broadly black; *scutellum* dark ferruginous, the base almost black, closely punctured; *elytra* ferruginous; *clavus* closely punctured in rows, towards the apex, crossed by a black band; *corium* bright ferruginous, pale at the base, and, except a row of punctures along the claval suture, quite smooth; across the middle a broad, black band, interrupted in the centre, extends in a line with the band on the *clavus*, from which it is disconnected by the claval suture; posterior margin with a distinct, black line, which also is continued from the apex considerably up the anterior margin; *membrane* very short, fuscous, with a yellowish streak at the base, along the exterior half of the posterior margin of the *corium*; nerves black; *legs* testaceous; *thighs* all black at the apex, first pair beneath with the margins of the channel finely serrate, and one posterior and one anterior and smaller spine. Length $1\frac{1}{2}$ line.

A very well-marked species, differing from the generic type in the length of the first joint of the antennæ, and, a proportionate shortening of the second joint. As specific characteristics, the thickness of the antennæ and the yellow of the *first* joint only are very noticeable.

A single ♂, in Dr. Power's collection, taken by Mr. Moncreaff, at Southsea, in May, 1870.

Genus DRYMUS, Fieb.

DRYMUS LATUS, n. sp.

Long-oval, black, naked, slightly shining; *head* narrow, pointed; *antennæ* long, black; *pronotum* long, campanulate, much widened posteriorly, sides sinuate throughout, disc anteriorly delicately, posteriorly rugosely, punctured; *scutellum* large, the central depression large; *elytra* fusco-piceous, punctured, the anterior margin pale piceous; *membrane* with two spots at the base, and one on each nerve, yellowish; *legs* piceous.

Head narrow, pointed; *antennæ* long, slender, black, or pitchy-black on the first joint, with fine, short, projecting hairs, the base of each joint very slender petiolate; *eyes* small, slightly removed from the pronotum; *rostrum* piceous.

Thorax: *pronotum* long, campanulate, much widened posteriorly, anterior margin much longer than the width of the head, anterior angles much rounded, sides sinuate throughout, the reflexed margin piceous; posterior margin widely, not deeply, concave; the callus at the posterior angles small, smooth; disc convex, anterior two-thirds black, very finely punctured (except behind the head a patch of coarse punctures), posterior third rugose-punctate, on its anterior portion, and especially in the middle, transversely depressed, posteriorly transversely convex, towards the posterior margin with a piceous tinge. *Scutellum* large, flattened, with distinct, round, irregularly-placed punctures, the central depression large. *Elytra* somewhat depressed, wide, scarcely so long as the

abdomen, fusco-piceous; *clavus* with four rows of distinct, black punctures; *corium* exterior to the outer nerve, pale piceous, disc with fine, black punctures in irregular rows; *membrane* with an undefined spot at the base of the two inner nerves, a long one exterior to the base of the outer nerve, and a long one on each of the four nerves posteriorly, not extending to the extremity, all yellowish. *Legs* slender, piceous, with fine projecting hairs; *thighs* pale at the apex, first pair beneath, beyond the middle, with one small spine on the inner edge.

Abdomen black, lustrous.

Length $2\frac{1}{2}$ lines.

This very distinct species, which we cannot find to have been described, fits very well to the characters given by Fieber to his genus *Drymus*, the antennæ and the pronotum, however, are proportionally longer than in either of the other species.

One example, ♀, was taken by Mr. Champion last August, in moss, in a wood near Hurst, Sussex.

Genus LASIOSOMUS, Fieb.

Body pilose, long-ovate.

Head pentagonal, middle lobe prominent, side lobes narrow, curved inwards; *eyes* globose, projecting beyond the anterior angle of the pronotum; *antennæ* hairy, first joint long, slightly thickened to the apex, projecting about one-third beyond the apex of the head, first, third, and fourth joints in length sub-equal, second rather longer, fourth scarcely thicker than third, long-fusiform; *rostrum* reaching across the metasternum, first joint rather longer than the head. *Pronotum* trapeziform, sides sinuate, across the middle depressed, anterior margin slightly and obtusely carinate. *Elytra*: *membrane* with four fine nerves, the inner two joining posteriorly, and forming a long, narrow cell; *legs* moderate, anterior *thighs* scarcely incrassated, unarmed.

Fieber places this genus between *Pionosomus* and *Acompus*.

Species 1.—LASIOSOMUS ENERVIS.

Pachymerus enervis, H.-Schf., Wanz., vi, 57, t. 199, fig. 618 (1842).

Lasiosomus enervis, Fieb., Eur. Hem., 185, 94 (1861).

Black, shining, clothed with pale hairs; *antennæ*, except fourth joint, *elytra*, and *legs* piceous-yellow.

Head unpunctured, apex piceous; *antennæ* piceous-yellow, fourth joint black, all clothed with very fine, short, projecting hairs.

Thorax: *pronotum* with large, irregular punctures, and intervening smooth spaces, anterior and posterior margins, and also undefined shades in the posterior

portion of the disc, piceous; *scutellum* slightly convex, finely punctured; *elytra* depressed on the claval suture, exteriorly convex, piceous-yellow, posteriorly with a darker transverse shade; *clavus* and each side of the claval suture with rows of large, distant punctures, discoidal nerve of the *corium* also with a row of similar punctures on its outer side, and a few others scattered on the disc posteriorly; *membrane* whitish, transparent, the nerves concolorous; *sternum* with large, deep punctures, and long, projecting hairs; *legs* entirely piceous-yellow, clothed with short hairs.

Abdomen black, hairy, shining.

Length 2 lines.

A single specimen was taken many years ago by Mr. Wollaston, but there is no record of the locality.

The species, the only one of the genus, has much *primâ facie* resemblance to *Stygnocoris sabulosus*, but it differs *inter alia* by its greater size, and stouter, more uniform antennæ. It is found but rarely in Switzerland, Austria, and Norway (*Schiödte*).

FAMILY 2.—PHYGADICIDÆ.

GENUS 2.—NYSIUS, Dall.

NYSIUS MACULATUS.

Nysius maculatus, Fieb., Eur. Hem., 168, 2 (1861).

Narrow, black, shining. *Head*: middle lobe above, side lobes inwardly, and a spot on the posterior margin, ochreous. *Antennæ* piceous. *Rostrum* black. *Pronotum* with three small spots in front, one on each side, one on the posterior margin, and on each posterior angle, ochreous. *Scutellum* black. *Elytra* pale ochreous; *clavus* and *corium* posteriorly brown-spotted; nerves and posterior margin of the latter with long, fuscous-black spots; *membrane* pale, infuscated between the pale nerves. *Sternum* with pale, coxal spots. *Thighs* black, yellowish at the apex; *tibiæ* fuscous-brown.

Head finely punctured, middle lobe on the surface, side-lobes inwardly, and a small spot on the middle of the posterior margin, ochreous. *Antennæ* piceous. *Eyes* brown. *Rostrum* black.

Thorax: pronotum with only a slight indication of a middle keel; the anterior third of the disc finely, the other two-thirds deeply, distinctly, and more strongly punctured; on the anterior margin, in the middle, a small spot, and behind each eye a still smaller one, on each side-margin one rather elongate, on the posterior margin one in the middle, and one on each prominent posterior angle, all ochreous. *Scutellum* finely punctured, except on the slight, smooth middle keel. *Elytra* pale, dingy ochreous: *clavus* posteriorly with indistinct, cloudy, fuscous spots; claval suture with a thin, black line; *corium* inwardly and posteriorly spotted like the clavus; anterior margin with a narrow, black line; posterior margin fuscous-black, interrupted by the ends of the two pale

nerves; nerves yellowish, each with three elongate, fuscous-black spots: *membrane* dingy whitish, nerves straight and pale, the intervals infuscated. *Sternum*: the posterior margin of the segments, a spot next the *coxæ*, and the odoriferous stigmata, pale ochreous or stramineous. *Legs*: *thighs* black, first pair on the anterior half more or less yellowish, with black dots in rows; second and third pairs yellowish at apex; *tibiæ* fuscous-brown, darker at apex, narrowly black at base; *tarsi* concolorous with the *tibiæ*, extremity of the joints, and claws, darker.

Abdomen: the margin of the posterior segments pale ochreous. Length $1\frac{1}{2}$ line, ♂.

Described from a single example taken many years ago, locality not recorded (*Douglas*). This species comes next to *N. thymi*, Wolff, from which it is at once seen to differ in being smaller, narrower, and black, with black legs. The specimen varies somewhat from the description in the Eur. Hem., but it has been seen by Dr. Fieber, who has determined it to be his *N. maculatus*.

Section 11.—OCULATINA.

Family.—SALDIDÆ.

Genus.—SALDA, *Fab.*

SALDA ARENICOLA.

Salda arenicola, Scholtz, Arb. u. Veränd., 6, 5 (1846): Fieb., Wien.

Ent. Monats., iii, 236, 9 (1859); Europ. Hem., 146, 9 (1861).

Long-oval, black, slightly shining, with golden, silky pubescence; *antennæ*, first joint at the sides, second at the apex, fulvous; *cuneus* with a sub-apical whitish spot; *corium* with a large, whitish, transverse, dentate blotch before the middle, extending from the anterior margin to the clavus, and eight or nine very small, posterior, whitish spots; *tibiæ* with a distinct, yellow, sub-apical ring.

Head: *antennæ* slender, black, with fine, short, projecting hairs, second joint twice as long as the first, third rather longer than the first, fourth rather shorter than the third; the first on both sides, the second at the apex on the upper-side, fulvous; *eyes* black with a fulvous line at the base; *rostrum* black, base externally, and the *labrum* fulvous.

Thorax: *pronotum* short, delicately punctured, sides narrowly flattened, margins slightly curved outwards, the edge scarcely reflexed; posterior margin deeply excavate over the base of the scutellum, produced squarely over the base of the *corium*; disc anteriorly with a moderate callosity, in which is one transverse fovea. *Scutellum* finely crenate-punctate or shagreened, before the middle a large, deep, transverse fovea. *Elytra*: *clavus* and *corium* finely, obtusely punctate, or shagreened; *clavus* with a white, sub-apical spot; *corium* with a large, irregular, white blotch before the middle, extending from the anterior margin of the clavus, its upper edge straight, the lower one dentate

through being produced posteriorly between the first and second nerves, on this middle portion is a black dot; below the blotch eight or nine very small, whitish spots, of which two, rather larger, lie close together near the anterior margin towards the apex, and two close to the posterior margin (some of these dots are sometimes obsolete); *membrane*, base and nerves black, between the nerves, posteriorly, yellowish-white, in each cell a more or less elongate and broad fuscous-black spot, generally also a small, white spot at the base of the inner three cells; exterior to the cells fuscous, on the outer margin black, with a large, triangular spot below the apex of the corium, and another smaller and round on the posterior margin. *Legs*: *thighs* yellow, posterior margin black, above and beneath a chain of black or brown spots, not extending to the apex; *tibiæ*, all with a broad, yellow ring before the black apex, first pair yellow, with a black line above, second and third pairs black, with a fine, scarcely perceptible, exterior, yellow line, third pair with fine, distant spines; *tarsi*, black, second joint yellow, third sometimes yellow at the base.

Length $1\frac{3}{4}$ line.

In form nearest to *S. pallipes*, Fab., Fieb., but more elongate-oval. Distinguished from all its congeners by the peculiar, large, light blotch on the corium, the blackness of the second and third pairs of *tibiæ*, and the yellow annulus on all of them.

Differs a little as to the maculation of the elytra from Fieber's description, and also in size, which is given as two lines long, otherwise identical.

A single example in Dr. Power's collection, captured last spring at Hayling Island by Mr. H. Moncreaff; others taken in August, near Bournemouth, by Mr. E. Saunders. (See vol. vii, p. 157).

[To be continued.]

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 5).

BY H. W. BATES, F.Z.S.

Sub-fam. LACHNOPHORINÆ.

This group was instituted by Lacordaire in the first volume of his "Genera," but with inaccuracies which soon led to attempts to reform it. One of these inaccuracies was the incorporation of *Callistus* with the other (chiefly tropical) genera, a combination which this great Entomologist had adopted from Baron Chaudoir. This was corrected by Schaum, who also proposed the further improvement of removing the group from the vicinity of the *Bembidiinæ*, with which Lacordaire had placed it in close combination, and associating it with the *Odacanthinæ*. None of these authors seem to have noticed the condition of the anterior tarsi of the ♂, which, I think, finally disposes of some of the

doubts regarding the group. They have three joints slightly dilated, the 1st linear, the 2nd and 3rd sub-oval, and all furnished beneath with two rows of fine, ragged squamæ. This character effectually separates the group from both *Callistus* (which has brush-like soles to its ♂ fore tarsi, and has been therefore rightly placed with the *Ohlæniinæ*), and the *Bembidiinæ*, which have, as is well known, two unequally dilated joints in the ♂. I have examined the ♂ tarsi in *Eudalia*, *Amphithasus*, *Anchonoderus*, and *Lachnophorus*. Schaum believed the group was closely allied to the *Odacanthinæ*, and that the connecting link was the curious *Selina Westermanni* of S. Eastern Africa. The discovery of a new genus in Australia, *Eudalia* (Casteln.), confirms, in a decided manner, the justness of this conception. *Eudalia*, in fact, has the greatest resemblance to certain species of *Anchonoderus* (sub-fam. *Lachnophorinæ*), but, at the same time, possesses some of the essential characters of the *Odacanthinæ*, especially the dorsal position of the lateral borders of the pronotum, which leave the convex flanks visible from above; it is, in fact, very closely allied to *Odacantha*. On the other hand, a new genus belonging to the present sub-family (*Amphithasus*, to be described presently) connects the group very clearly with the *Anchomeninæ*; and another new genus, which will be described in a future paper, has many of the characters and the general form of *Anchomenus*, with the trophi and truncated elytra of *Casnonia* (sub-fam. *Odacanthinæ*). Other links occur between the *Anchomeninæ* and *Coptoderinæ*, &c.* In short, it is clear that many closely allied sub-families, hitherto included in that indefinable assemblage, *Truncatipennes*, are but modified *Anchomeninæ*, forming so many distinct branches from that same stem, and each specialized in its own separate direction. Such unequal ramification cannot be represented to the mind except by an imaginative effort, and hence probably the absence of attempts to establish a genealogical system of classification, instead of a unilinear one, condemned in theory by every Naturalist, and yet continually being attempted in practice.

The name of the group, *Anchonoderinæ*, was ill-chosen by Lacordaire, *Lachnophorus* being the more typical genus. In fact, it is doubtful if *Anchonoderus* can stand as a generic name. The characters which distinguish the sub-family are as follows:

* One of these singular forms is *Sphallax peryphoides*, from New Zealand, described by me in this Magazine (Vol. iv, p. 55), of which I have since seen a specimen in the British Museum, ticketed "*Actenonyx bembidioides*, White." The generic characters given by White are meaningless and misleading, although there is no doubt the two names refer to one and the same species. This curious little insect has the solid horny ligula of the *Helluoninæ*, but no other resemblance whatever to that group. It has the broad triangular mesothoracic epimera (and the facies) of the *Bembidiinæ*, but truncated elytra and thickish oval terminal joints to the palpi. Unless it be considered an anomalous form of the *Odacanthina*, it must form a distinct equivalent group, under the name of *Actenonygineæ*.—H. W. B.

Labrum quadratum, antice truncatum. Palpi plus minusve pilosi, articulo ultimo elongato, apice angustato; plerumque fusiformi vel ovato, apice submembranaceo, abrupte acuminato. Ligula apice truncata, bisetosa, paraglossis angustis, ligulâ longioribus, apice liberis. Antennæ filiformes, articulis basalibus hirsutis, pubescentia densa ab articulo 3^{io} vel 4^{io} basi incipienti. Elytris apice haud sinuatis, obtuse rotundatis vel truncatis. Pedes omnino pubescentes, tarsi 3 articulis tribus basalibus leviter dilatatis, angulis rotundatis, dense pilosis, plantis biseriatim squamosis. Episterna mesothoracica angusta, parallela, coxas haud attingentia.

SYNOPSIS GENERUM.

A. Palporum articulus ultimus sub-linearis.

EUDALIA, Casteln. Corpus crebre punctatum, elytris oblique truncatis.

AMPHITHASUS, n. g. Corpus læve, elytris recte transversim truncatis.

ANCHONODERUS, Reiche. Corpus crebre punctatum, elytris apice rotundatis.

A.A. Palporum articulus ultimus fusiformis, apice acuminato.

* Corpus supra punctatum.

LASIOCERA, Dej. Antennæ articulis nonnullis dilatatis, setis longissimis instructis.

LACHNOPHORUS, Dej. Antennæ simplices, dense pubescentes.

** Corpus supra glabrum.

EUCÆRUS, Leconte.

A.A.A. Palporum articulus ultimus tumidus, apice abrupte acuminato.

CHALYBE,* Casteln. Caput supra planatum, grosse punctatum.

EGA, Casteln. Caput supra convexum, læve, postice collo brevi constrictum.

SELINA, Motschulsky. Caput supra convexum, læve, postice collo elongato constrictum.

The genus *Camptotoma* (Reiche), introduced by Lacordaire into the group, is unknown to me, and can scarcely, according to the characters given, belong to the *Lachnophorinæ*. *Stigmaphorus* (Motschulsky), is founded on species of *Lachnophorus*, without any differential character of the slightest value. *Eucærus* and *Eudalia* are here incorporated for the first time with this sub-family.

The great majority of the genera and species belong to the tropical and warm parts of America, from the Rio de la Plata to California. *Lasiocera* is peculiar to tropical and sub-tropical Africa and Asia; *Eudalia* occurs only in the hotter parts of Australia.

The *Lachnophorinæ* are insects below the medium size of the *Cara-bidæ*. In facies they (*Lachnophorus*, *Lasiocera*, *Chalybe*), resemble *Bembidiinæ* of the genus *Tachypus*, or (*Eudalia*, *Amphithasus*, *Anchono-*

* Nomen prius usitatum, Lepid., Duponchel, 1836.—EDS.

derus), the true *Anchomeni*, e. g., *A. albipes* and *oblongus*; but the extreme forms of *Ega* and *Selina* remind one rather of *Anthici* or ants. They inhabit moist situations, running nimbly over muddy edges of pools or about the roots of herbage.

Genus EUDALIA.

Castelnau, Trans. Roy. Soc. Victoria, pt. ii, vol. viii, p. 102.

The author of the genus gives scarcely any characters, and places it in the sub-family *Ctenodactylinæ*, from which the distinctly truncated elytra distinguish it. On dissection, I find the ligula rather short, triangular, with two long setæ on its straight upper edge, besides a short one at the angles, which are rectangular; the paraglossæ are quite free from the upper part of the sides, narrow, and incurved. The mentum is broad, with a very broad simple tooth in the middle, much shorter than the wings, which are externally rounded. The palpi have the terminal joints very nearly cylindrical, in the labial less so than in the maxillary, in which latter they equal in length the preceding. The maxillæ are strongly hooked and densely spinose within. The surface of the body is punctulated, and, with the legs, clothed with short pale pubescence, as in *Lachnophorus*; the slightly dilated male tarsi are also precisely of the same form as in that genus. The truncature of the elytra is, however, more decided, and is slightly incurved, and the head forms a very distinct neck at its junction with the thorax. The marginal stria of the elytra is not continuous along the apical margin.

E. LATIPENNIS, Macleay, Trans. Ent. Soc. N.S.W., 1864, p. 108.

E. WATERHOUSEI, Casteln., l. c., p. 102.

EUDALIA MACLEAYI, n. sp.—*Nigro-æneus, subnitidus, palpis, mandibulis, antennarum articulis 3^{to} et 4^{to} basi pedibusque rufo-testaceis, geniculis obscuris; capite punctato, vertice lævi; thorace capite multo angustiori, grosse punctato, disco antice sublævi, oblongo, ante basin constricto; elytris latis, magnis, sub-quadratis, punctato-striatis, interstitiis sparsim punctatis, sternis abdominisque basi grosse punctatis.* Long. 4 lin. ♂ ♀.

New South Wales. Received from W. McLeay, Jun., Esq., Sydney.

Genus AMPHITHASUS, g. n.

Corpus glabrum, caput breviter ovatum, oculis haud exstantibus. Palpi elongati, graciles, breviter pubescentes, articulo ultimo angusto, apicem versus gradatim acuminato. Antennæ ab articulo 2^{do} dense pubescentes. Thorax capite vix latior, cordatus. Elytra convexa, apice late obtuse truncata, stria marginali per apicem continuata, suprâ profunde punctato-striata, interstitiis lævibus. Pedes tenuiter, tarsi densius, pubescentes.

In facies, the species on which this genus is founded greatly re-

sembles *Anchomenus albipes*. It is probable that *A. elegans*, Dej. (Sp., v, 725), belongs also to the genus; but *A. dimidiaticornis*, Dej., is most likely a small species of *Oxycrepis* (*Feroniinae*).

AMPHITHASUS TRUNCATUS, n. sp.—*Piceo-niger*, glaber, epistomate, labro, palpis, pedibus, antennarumque articulis sex basalibus flavo-testaceis, 7—11 albis; capite lævi, oculis vix prominentibus; thorace capite cum oculis paulo latiori, elongato-cordato, postice modice haud abrupte coarctato, supra convexo, lævi, marginibus anticis et posticis grosse punctatis; elytris oblongis, apice late obtuse truncatis, valde convexis, profunde striatis, striis concinne regulariter punctatis, interstitiis impunctatis; abdomine rufo-piceo.

Long. $3\frac{1}{2}$ lin.; lat. elytr. $1\frac{1}{2}$ lin.

Ega, Upper Amazons.*

Genus ANCHONODERUS, Reiche.

Few modern genera have been introduced in a more confused manner than the present. It was placed near *Anchomenus* by its author, and the long definition omits its most distinguishing characters. The type species cited, *Platynus elegans* (Brullé), cannot be separated from *Lachnophorus*, and the second and third species quoted by the author flatly contradict his generic characters "*elytra apice rotundata, haud sinuosa, interstitiis granulatis*," both those species being described by Dejean as having smooth interstices, and (at least, the first) sinuated elytra. The genus need not be withdrawn on account of the type belonging to a previously described and still maintained genus, as some of the species included in it (*binotatus*, *subæneus*, *rugatus*, &c.) form a well-defined group, distinguished from *Lachnophorus* by the much less prominent eyes, rounded apex of the elytra without trace of truncature, and by the less fusiform shape of the terminal joint of the palpi.

— **ANCHONODERUS SUTILIS**, n. sp.—*A. subæneo* (Reiche) *similis, magis depressus, oculis majoribus, elytris minus profunde striatis*. *Piceo-niger, subnitidus; antennis rufo-testaceis, articulo basali, palpis, pedibusque flavo-testaceis; capite thorace latiori, supra lævi; oculis magnis; thorace cordato, postice minus quam in A. subæneo angustato, angulis posticis productis, supra subtilissime coriaceo; elytris parum convexis, haud profunde, acute striatis, striis vix punctulatis, interstitiis vix convexis, subtilissime confuse punctulatis, marginibus tenuiter rufescentibus*.

Long. $3\frac{1}{2}$ lin.

Guatemala. One example in Mr. E. Brown's collection. In the finely-impressed and almost impunctate striæ it agrees with *A. unicolor* of Chaudoir, which, however, has black legs. It has great general resemblance to the common *A. subæneus* of Columbia and Central America.

* Except when otherwise stated, the new species are described from examples in my own collection.—H. W. B.

ANCHONODERUS SCABRICOLLIS, n. sp.—*Fusco-æneus*, pilis longioribus vestitus, antennarum basi, palpis, pedibusque albo-testaceis; capite thorace paulo angustiori, suprâ passim haud profunde punctato; labro, antennis (basi albo excepto), mandibulisque rufo-piceis; thorace cordato, lateribus juxta angulos posticos rectis, suprâ grosse cicatricoso-punctato; elytris oblongo-ovatis, profunde crenato-striatis, interstitiis punctulatis leviterque plicatis, utrinque maculis 2 rufo-testaceis, quarum una curvata prope humerum, altera major ante apicem, aliquando usque ad apicem extensa, ornatis; corpore subtus nigro, nitido, punctato.

Long. $2\frac{2}{3}$ lin., ♂ ♀.

Apparently allied to *A. undatus*, Chaud., but much smaller; differs from *A. rugatus*, Reiche, by the colour of the antennæ and sculpture of the elytral interstices. The facies, sculpture, and pubescence would justify its being placed in *Lachnophorus*; but the head being narrower than the pro-thorax, and the eyes but moderately prominent, show its nearer affinity with *Anchonoderus*. The thorax is very much rounded on the sides, greatly and abruptly constricted at the base. The punctuation of the elytral striæ is coarse near the base, less distinct near the apex, and the punctures crenulate only the interstices on the outer side of each stria. The pale spots are variable in size, the apical one forms a waved macular band on interstices 3—9, but sometimes extends along the margin to the apex.

Rio Janeiro. Collected by the late Mr. Squires and Rev. Hamlet Clark. In my own collection and that of Mr. Grut.

Kentish Town: June, 1871.

DESCRIPTIONS OF NEW SPECIES OF AFRICAN DIURNAL LEPIDOPTERA.

BY CHRISTOPHER WARD.

PAPILIO CONSTANTINUS, n. s.

♂. *Upper-side*: rich brown-black, both wings crossed with a yellowish-white band, commencing midway at the inner margin of lower wing, and curving outwards to the apex of the upper wing. Through the lower wing this band is continuous; through the upper wing it is broken into spots, which spread inwards in a narrow, irregular band to the anterior margin. In the cell near the extremity an oval spot; following the outer edge of both wings is a series of yellowish-white spots, placed in pairs between the nervures. Tails rather short, spatulate, and marked on each side with yellowish-white.

Under-side: marked as above, but a lighter brown, and the lower wing is of a lighter shade than the upper one. Between the nervures of the lower wing, and near the apex of the upper wing, are strongly-defined streaks of dark brown.

Expanse $3\frac{1}{2}$ inches.

Habitat: Ribé, East Africa.

This species resembles *Pap. Thersander* (the latter may probably be the ♀ of *P. Phorcas*), but differs in the band crossing the wings being curved outwards, the spot in the cell, and the very different colouring of the under-side.

ACRÆA SATIS, n. s.

Upper-side white, nervures brown; base of upper wing, brown, which is continued round the upper margin; a broad band of brown crosses midway from the anterior margin, narrowing towards the anal angle; at the upper-side of this band beyond the cell is a large white spot, which is bordered on the outer margin with brown; beyond this spot the remainder of upper wing is a dusky-grey. Lower wing crossed midway by a broken, irregular band of brown spots. Hind margin bordered with brown, containing white spots, which are most distinct towards the anal angle.

Under-side: as above, but rather lighter in colour; the band crossing the lower wing and the spots round the hind margin much more distinct and tinged with yellow.

Expanse $2\frac{7}{10}$ inches.

Habitat: Ribé.

This fine *Acræa* seems allied to the Madagascar species represented by *A. Hova*, of Boisduval.

EURYPHENE RIBENSIS, n. s.

♂. *Upper-side*: dark brown, crossed vertically with bands of purple.

Under-side: base of upper wing brown, which is continued across midway, then changes to an ochre-yellow, and on the upper margin to grey; the hind margin is light brown; lower wing crossed vertically with alternate bands of light brown and grey, curving inwards, the hind margin being brown.

Expanse 2 inches.

Habitat: Ribé.

EURYPHENE CAMARENSIS, n. s.

♂. *Upper-side*: dark brown; both wings crossed with bands of purple curving inwards.

Under-side: red-brown, upper wing crossed vertically midway with a narrow line of darker brown; beyond, a second narrow line, which is bordered on the outer edge by five small, black spots, which are edged on the inner side with grey; lower wing, crossed diagonally with a distinct, narrow band of dark brown; near the base is a brown spot, and following the outer margin a narrow waved line.

♀. *Upper-side*: brown, upper wing crossed vertically by a narrow band of pale yellow, beyond by a double, narrow, undulating line of yellow; near the apex, which is tipped with white, are three small, white spots; lower wing brown, with a large patch of light yellow crossing the wing from the anterior margin, and narrowing at the inner margin; a double narrow band near the hind margin and curving inwards.

Under-side: pale yellow, upper wing crossed midway by a line of brown; beyond, a broader band of brown, bordered on the outer side with seven small, brown spots, the four upper ones being edged with white on the inner side; lower

wing crossed, midway from anterior to inner margin, by a distinct, narrow band of brown; an undulating line of brown follows the outer margin of both wings.

Expanse, ♂, 2 inches; ♀, 2½ inches.

Habitat : Camaroons.

EURYPHENE CERCESTIS, n. s.

♂. *Upper-side* : rich purple, changing to brown, and iridescent; the cell of the upper wing barred across with light and dark brown; beyond the cell, two spots of light brown.

Under-side : grey, mottled with light brown, a waved line of darker brown following the outer margin of both wings; near the base of the lower wing three black spots, two of them confluent.

Expanse 2 inches.

Habitat : Camaroons.

GODARTIA CROSSLEYI, n. s.

♂. *Upper-side* : thorax, black, with a grey streak down the centre; abdomen, bright rufous-brown.

Fore-wing, deep black, crossed diagonally by two broken bands of irregular longitudinal markings of yellowish-white, one band crossing the cell, the other above it; beyond the upper one are four small, distinct spots of yellowish-white, forming a narrow band; the outer margin is bordered with seven clear, white spots.

Hind wing, black, broadly marked at the base and centre with yellowish-white, broken on the outer edge into seven oval spots; following the outline of outer margin, a band of small spots of a similar colour, the outer margin edged with eight clear white spots.

Underside : thorax, head and legs black, with numerous small, white spots; base of wings brown; markings as on the upper-side, but not so clear in colour.

♀. Does not materially differ from the male.

Expanse 3½ inches.

Habitat : Camaroons.

I have much pleasure in naming this fine species after Mr. Alfred Crossley.

GODARTIA TRAJANUS, n. s.

♂. *Upper-side* : body brown; thorax with a grey line down the centre.

Fore-wing, black, the base and lower half of the cell bright, rufous-brown; a broad diagonal band of yellowish-white crossing the wing midway, beyond this a narrow curved band of seven clear, white spots; two small white spots near the apex; a line of grey borders the inner margin.

Hind-wing, brown-black, the centre broadly marked with grey; a band of small, grey spots follows the outline of the hinder margin.

Under-side : head, thorax and legs black, with small white spots; fore wing marked as on the upper-side.

Hind-wing, entirely brown, changing to bright rufous brown at the inner margin; between the nervures are streaks of darker brown.

♀. Does not differ materially from the male.

Expanse 3½ inches.

Habitat : Camaroons.

[To be continued.]

Occurrence in Britain of Comptoschilus palpalis, Er. ; a genus and species of Oxytelides new to our list.—I have recently taken a single example of this interesting addition to our Brachelytrous Fauna, by sweeping on the sides of a ditch near Tunbridge. In facies the insect strongly resembles *Acrognathus*, in which genus it was placed by Erichson ; but its much smaller size, $1\frac{3}{4}$ lin. (Engl.), at once readily distinguishes it from *A. mandibularis*.—T. V. WOLLASTON, Dry Hill, Tunbridge, 16th June, 1871.

Notes on some recently described species of Oxytelus allied to O. depressus.—Herr Czwalina, in vol. xiv of the Berlin. Entom. Zeitschr, p. 419, *et seq.*, has recently described three new species of the *depressus* group (in which the head, thorax, and elytra are very thickly and finely longitudinally striate), taken near Königsberg in company with that common species ; thus increasing Pandellé's list (in Grenier's Cat. pt. 2) of that group to the number of *twelve*, and suggesting a doubt whether Gravenhorst *redivivus* would know his own property.*

Czwalina thus tabulates his new species and their allies :—

- | | | |
|-----|---|-------------------------------|
| 1a. | Head and thorax with smooth spaces | <i>speculifrons</i> , Kraatz. |
| 1b. | „ „ without „ „ | 2. |
| 2a. | Anterior tibiæ externally simple | <i>depressus</i> , Grav. |
| 2b. | „ „ „ slightly emarginate | 3. |
| 2c. | „ „ „ moderately deeply emarginate or notched | 4. |
| 3a. | Antennæ with four larger apical joints | <i>tetratoma</i> , Czw. |
| 3b. | „ „ „ three „ „ „ (as in all the other species) | <i>hamatus</i> , Fairm. |
| 4a. | Upper angle of emargination of anterior tibiæ apparently acute, owing to thickly congregated bristles ; abdomen finely but distinctly punctured | 5. |
| 4b. | Upper angle of emargination of anterior tibiæ rounded, the bristles being more removed from each other ; abdomen scarcely perceptibly punctured | <i>Saulcyi</i> , Pand. |
| 5a. | Thorax almost twice as broad as long | <i>transversalis</i> , Czw. |
| 5b. | „ „ only half broader than long .. | 6. |
| 6a. | Large ; elytra impunctate | <i>pumilus</i> , Er. |
| 6b. | Small ; elytra somewhat remotely but distinctly punctured | <i>affinis</i> , Czw. |

The natural sequence of these species is stated by the author to be thus : *speculifrons*, *transversalis*, *Saulcyi*, *depressus*, *hamatus*, *affinis*, *tetratoma*.

O. transversalis (p. 419) is described as equalling large *depressus* in length, but rather broader, of a deeper black, with pitchy legs ; the base of the tibiæ rather yellow, but the claw-joint dark. Its antennæ are somewhat stouter at the apex, and abdomen rather more strongly punctured above, the sixth segment beneath in the ♂ having in the middle two longish and not very approximated tubercles, with a fine granule between each of them and the side margin. The hind margin of the seventh segment in the same sex is widely and not very shallowly emarginate in the middle, and has a longitudinal callosity very near each side margin. It is

* The description of *O. tetracarinatus*, Block, published in 1798, must have been much in advance of its time ; as that insect is identified with the subsequent *O. depressus* of Gravenhorst in V. Harold's Col. Heft, vi, p. 101, in the face of the other closely allied eleven species now known.—E. C. R.

smaller than *pumilus*, which it resembles in colour, but from which the characters in the table will separate it. The author queries this species as probably identical with *Fairmairei*, Pandellé, but is not able to reconcile with it that author's description of the punctuation of the abdomen (*punctis densis evidentioribus*), nor of the abdominal eccentricities of the male (*cristulis sulco separatis*).

O. affinis (p. 420) is described as like *hamatus*, but with the legs, and especially the tibiae, darker; and the denticle on the sixth abdominal segment in the ♂ beneath smaller, with the bent part more sharply deflexed. The seventh segment has also in the middle two longish tubercles slightly directed inwards obliquely, and is ciliated with golden-yellow hairs at the apex, somewhat concealed by the denticle of the sixth segment: its posterior margin is also rather triangularly emarginate in the middle.

O. tetratoma (p. 421) is more attenuated in front and behind than any of its allies. Its abdomen is more thickly and strongly punctured on the upper side than in *O. depressus*: its sixth segment in the ♂ beneath having the apex slightly emarginate, with a small granulation on each side, between the middle and side margin; and its seventh segment in the same sex being produced longly and sharply at the apex.—E. C. RYE, 10, Lower Park Fields, Putney, S.W., June, 1871.

Captures of Coleoptera at Studley, near Ripon.—I have recently taken the following species at Studley. By sweeping, chiefly under some fir-trees: *Aleochara ruficornis*, two or three; *Haploglossa pulla*, *Homalota hepatica*, two; *H. elegantula*, Brisout (only recorded as British, hitherto, from Monk's Wood, taken by Mr. Crotch); *Atomaria diluta*, one (my friend, Mr. T. S. Mason, also found a specimen of this insect in moss, near the same place); several *Rhinomacer attelaboides*, of a yellowish tone, unlike the Rannoch greenish specimens; *Cryphalus abietis*; one of the narrow, bright, and coarsely punctured *Haplocnemus nigricornis*; *Limonium cylindricus*, *Meligethes symphyti* (there were no blue-bells near), and both sexes of *Colon dentipes*.

In moss, by the side of a little hill-side stream, *Mniophila muscorum* was abundant, together with a few *Quedius umbrinus*; here I also took another *Aleochara ruficornis*, *Bolitobius cingulatus*, and *Badister humeralis*.

Under bark of a felled elm, *Ips quadriguttata* was abundant, with a few *Agathidium nigripenne*.

In the wet shingle by the side of the Skell, the rare and curious little Trichopterygian, *Actidium concolor* (Sharp), and *Thinobius longipennis* were not uncommon, together with three or four of the pale form of *Homalota exilis*, simulating *H. pallens*, and *Philonthus rubripennis*.—EDWARD A. WATERHOUSE, Fountain's Hall, Ripon, June 14th, 1871.

Capture of Odontæus mobilicornis at Cirencester.—On the evening of the 24th inst., a fine male of this rare Lamellicorn flew into the college here. He now stops a gap in my collection.—W. R. McNAB, Royal Agricultural College, Cirencester, 26th May, 1871.

Mr. Murray's List of Swiss Butterflies.—Corrections, &c., to the list of Butterflies captured by me last year in Switzerland. (See E. M. M., vol vii, p. 258.)

Argynnis Daphne (?): this should be *A. Ino*. *Thecla pruni*: a mistake for *Th. ilicis*. *Erebia Pronœ*: the form which I took is placed in the British Museum as *Erebia Arachne* (Fabr.), var. *Pitho* (Hüb.). In addition to those enumerated in my list, I took *Erebia Pirene* plentifully above Sefry and in other places.—R. P. MURRAY, Mt. Murray, Isle of Man, June 6th, 1871.

Tæniocampa gothicina, Herrich-Schäffer, in Morayshire.—A moth occurs here not uncommonly at fallow blooms, in the early spring months, which I hitherto have regarded as a pale variety of *Tæniocampa gothica*, but which I now find agrees in every respect with *Orthosia gothicina*, Herr.-Schäffer (*Tæniocampa gothicina*, Guenée).

The markings are similar to those of *gothica*, but the colour is grey and reddish-brown; the space between and under the stigmata light reddish-brown, instead of black, as in *gothica*; the stigmata are delicately outlined with yellow.

As Herrich-Schäffer considers *gothicina* a good species, and it is also regarded as such by Guenée & Walker (Brit. Mus. Cats.), I suppose it must be now added to our British lists.

I regret not having secured a series, owing to the reason above stated. A solitary specimen in my cabinet, taken I believe in 1868, is the only one I have retained.

The fact that *gothicina* is said to occur in Lapland, would seem to suggest the likelihood of the Forres species being correctly referred. — GEO. NORMAN, Cluny Hill, Forres, June, 1871.

[There can be little doubt that Mr. Norman has correctly identified his insect with Herrich-Schäffer's species. Guenée simply refers to the figure, as he had not seen the insect. The total obliteration of the conspicuous black marking between the stigmata, and the yellow outlining, give it a very peculiar appearance; in other respects, *i. e.*, in form, and arrangement of markings, the two forms or species are identical. In the Stettiner Entom. Zeitung for 1861, p. 367, Staudinger notices a ♀ example taken by Wocke, in Finmark, as a peculiar form of *gothica*, and in his new Catalogue he (presumably from locality) refers this to *gothicina*, which he places as a variety of *gothica*. We offer no opinion as to the specific rights of *gothicina*. At all events, it is a very strongly marked form, and the fact of ordinary *gothica* occurring in the same locality does not militate against the distinctness of the two. Mr. Norman's citation of Walker's Catalogues rather amuses us; his Catalogues are absolutely useless, so far as authority is concerned.—Eds.]

Variety of Cidaria suffumata.—I have a very pretty variety of *Cidaria suffumata*, which was taken here last month by Mr. J. B. Vickerman. The specimen has the basal blotch, and the broad median band of the fore-wings as in ordinary specimens, but considerably darker in colour, whilst nearly the whole remaining portion of the wings is of a beautiful creamy-white; the hind-wings are brownish-grey at the base as usual, but with the outer half of the creamy-white colour of the fore-wings. — GEO. T. PORRITT, Huddersfield, June 9th, 1871.

Sialis fuliginosa in the Lake District.—The only pair of a *Sialis* in a series of

miscellaneous *Neuroptera* collected by Mr. Stainton in the English Lake District during the first half of this month, are *S. fuliginosa*, taken at Ambleside (River Rothay), on the 5th inst. The species no doubt occurs all over Britain. I have now seen it from Perthshire (Rannoch), Westmoreland (Ambleside), Surrey (near Box Hill and Haslemere), and Dorsetshire. — R. McLACHLAN, Lewisham, 17th June, 1871.

Some considerations as to Mr. Lewis's views concerning Entomological Nomenclature.

—Mr. Lewis's paper in the last number of this magazine has induced me to pen the following (non-editorial) remarks:—

There are many points upon which I most thoroughly and heartily agree with Mr. Lewis; there are others upon which I cannot, in accordance with my predilections, possibly agree with him. I agree with him that the record of a single previously unnoticed fact, in the economy of a common insect, is worth volumes of dissertations on nomenclature. I agree with him in his unsparing condemnation of a class of entomologists whom he aptly terms "resurrection men." But I do not agree in condemning them *because* they are resurrection men. I go further, and avow my belief that, when they disinter an old name, concerning the correct application of which there can be no doubt, they deserve praise rather than condemnation;* they fulfil one of the most necessary requirements of natural science. I condemn them because, as a rule, they, as Mr. Lewis says, "take to their studies" "the predispositions of the antiquary," and, in their reverence for old names, raise ghosts, not entities; in other words, they seek to overthrow names thoroughly substantiated, to give place to others, nine-tenths of which have the merest shadow of a right to the superior position their admirers would allot to them; names that should sink into oblivion, or rest quietly in the list of "*species indeterminatæ*." Furthermore, I agree with him that "it is expedient to have certainty in nomenclature." By all means: let us have certainty, and as soon as possible. The change of names that weighs so heavily upon Mr. Lewis is, in many cases, the result of the conscientious endeavours of entomologists to obtain that certainty. Mr. Lewis cries for it *now*; I am content to wait till I get it; or rather, I should say, neither hope nor expect to have it during my time. Mr. Lewis would obtain it by a heroic process—*aux grands maux, grands remèdes*,—and by applying his maxim "*communis error facit jus*," draw a line and say "henceforward there shall be no change; whatever may be the errors, or however glaring and ridiculous they may prove in the sequel, from this time they shall pass uncorrected; nay more, they shall no longer be considered as errors, but as unimpeachable truths." Surely Mr. Lewis, in promulgating his favourite maxim, must take to *his* studies the predispositions of the amateur, rather than the calm investigation of the naturalist; he must be of those who, having mechanically spaced out, labelled, and arranged their cabinets and collections, feel wrath at any audacious individual who may suggest to them that neither nomenclature nor sequence is correct. The application of Mr. Lewis's legal maxim is the greatest affront that could possibly be offered to an *exact* science. He ought to know that, however desirable and efficacious its application may be in legal matters, it cannot become law in natural science, because

* It matters to me not a jot whether such a name supplant another according to the rules of priority (which I hold sacred), or rank as a synonym only; in either case it is one step towards attaining certainty by legitimate means.—R. McL.

the very essence of the studies of the naturalist ought to be the exposure and obliteration of error; there can, in an exact science, be no "common error." It is true that the names of insects, or of any other natural productions, are not science in themselves, but they form an integral portion of science, and a common error can no more become law with them than in any other branch,—biology, for instance.

I agree with Mr. Lewis that "it is expedient to have no more synonymy,"—the word is the naturalists' *bête noire*; but the idea that it can be summarily put a stop to is profoundly Utopian. It is expedient there should be no more crime, no more deceit, in the world; and, as a consequence, no more prisons, police, and lawyers. But the evils exist, and the other *necessary* evils are required to keep them in check. Synonymy exists, and *its* existence renders necessary the evil that entomologists *must* waste precious time in unravelling it. The suppression of both crime and synonymy by a *fiat* is utterly impossible. I couple the words, but the existence of synonymy is too often owing to what are actual *crimes* against science. I hold that, when an entomologist describes an insect as new, without using every endeavour that is humanly possible to discover whether it be not *already* described, he commits one of the greatest of crimes against science. Mr. Lewis would condone this; and, by applying his maxim "*communis error facit jus*," absolve the evil-doers, and make their crime a virtue. Here again, it seems to me, that he shows the predispositions of the amateur, or, of the visionary. When that millennium shall arrive when everything is understood thoroughly all over the world, and the truth be completely arrived at in the natural way (not partially, by a glorification of error), there need be no more synonymy: synonymic lists will then be "*functi officiis*:" till then it is to be hoped that we shall have many of them (there cannot be too many if conscientiously compiled), with all the synonyms, even if they extend to a page in length, fully enumerated under each species.

It is hardly necessary to explain that the foregoing remarks are made from a general point of view, and not from a lepidopterological one only. Having commenced my entomological studies as a lepidopterist, though possibly only as an amateur, it needs no great amount of discernment to make obvious to me the fact that British Macro-lepidopterists stand urgently in need of a thoroughly scientific monograph. Mr. Lewis's criticisms in his paper in our last number, and at the Entomological Society, show that he should possess the acquirements necessary for its production. Let us hope our lepidopterists are tired of the degrading publications that have been recently submitted to them; works in which descriptions and advertisements are unblushingly and inextricably blended. If, then, he will prepare such a work (*and include synonymy*), he will obtain the gratitude of his fellow-labourers; or, at any rate, by being able to arrange his collections *after his own method*, he will be spared the annoyance originating from the change effected by, and the want of unanimity in, the works of others.—R. McLACHLAN, Lewisham, 12th June, 1871.

On the rules and use of Synonymy: in reply to Mr. W. A. Lewis.—Mr. Lewis does not appear to have quite understood the passage which he has quoted in the current volume of Ent. M. Mag., p. 3., from one of my letters; and a full explanation is therefore desirable. In my paper on the Generic Nomenclature of Diurnal Lepidoptera (Journ. Linn. Soc., vol. x, pp. 494—503), I observed that, "we must either

"take the earliest or the latest works of Linnæus to begin with ; and, if we take the "earliest, we are met with the difficulty that Linnæus himself changed the names "of several of his own species in his different works." I allude here to the first edition of Linnæus' *Fauna Suecica* (1746), in which he has given names to many of the species described, but not to all. *With scarcely an exception, these names, applying to a great number of our commonest insects, were changed by Linnæus himself, in his Systema Naturæ* (ed. 10, 1758), and subsequent works. Should 1758 be eventually fixed, as will probably be the case, for the commencement of our specific nomenclature, that date will admit the important works of Poda, Scopoli, and Müller, without compelling us to return to the Linnean names of 1746. But the twelfth edition of Linnæus' *Systema Naturæ* (1767), is the date fixed by the Rules of the British Association for Zoological nomenclature ; and these rules are at present considered binding on Zoologists. An international congress of naturalists would be very desirable to reconsider, and, if necessary, to revise, them.

One great object of synonymy is to attempt to utilise the whole of the accumulated literature of entomology ; and the conscientious attempts which are now being made by Werneburg, Butler, Staudinger, and others,* to apply the law of priority to entomology more thoroughly than formerly, will eventually, it may be hoped, place our nomenclature on a firmer basis than at present. Errors will of course occur, and some temporary confusion ; but the difficulty caused by the doubt about the dates of 1758 or 1767 being the starting-point is limited, and can be got over. The changes necessitated by an application of the law of priority to the names of species are comparatively small, but appear more extensive than they really are, because they necessarily occur most frequently among common species. The real sources of confusion to be feared are not the honest applications of the law of priority, but the attempts to evade it, as in Gnéée's substitution of his MS. name *Chortobius* for *Cænonympha*, Hübner, merely because the French entomologists reject all Hübner's generic names, even if they have been adopted by every one else.

I cannot admit that synonymy is of less use now than formerly ; for no one can have access to all the books in any branch of entomology ; and, if he have a limited library, and identify an insect by a name which has been overlooked by later authors, it is useless to him. If the law of priority were rescinded, no one would any longer take the trouble to identify any species he intended to describe as new, and we should soon have twenty new names for every old name, which would otherwise have been restored.

In the compilation of my forthcoming "Catalogue of Diurnal Lepidoptera," there were but two courses open to me, either to adopt Doubleday, Hewitson and Westwood's "Genera of Diurnal Lepidoptera," as an unassailable starting-point (which would correspond to the course advocated by Mr. Lewis), or to consult the whole literature of the subject, and test every name employed by the Rules of the British Association. This latter is the system of which Mr. Lewis disapproves so much.—W. F. KIRBY, Dublin, June 2nd, 1871.

Entomological Nomenclature.—I do not think Mr. Lewis will find himself mistaken in expecting the support of Lepidopterists in the opinions he has so ably advanced. It certainly is high time that we had some recognised nomenclature in

* A careful perusal of Von Harold's paper on Nomenclature (*Coleopterologische Hefte*, vi, 1870, pp. 37--69), is recommended to all who doubt the utility of the so-called "resurrection men."—E. C. R.

entomology; the question is, whose business is it to attempt a settlement? I venture to suggest that the Entomological Society* should devote itself to the work, and that a list should be published under its sanction, the names in which should be exclusively used by the members, and in all the Society's publications: I do not see how it can be done otherwise. Surely the science has advanced to a stage which would allow of this being done. At present, we are at the mercy of individuals, and one name succeeds another without the slightest probability of any becoming permanent. Doubtless there are many difficulties in the way; if Mr. Lewis' recommendation that all names but those *now* in use be ignored, be followed out, the question will arise, which of the two or three names now in use for the same species is to be retained?

Another point for consideration is the arrangement of the genera and families. Is Doubleday's or Stainton's to be followed, or neither? Which is the most natural place for the *Pseudo-Bombyces* or *Cuspidates*? Are they natural connecting links between *Geometræ* and *Noctuæ*? If not, why are they placed between them?†

I, for one, hope the subject will be thoroughly ventilated, and that the result will be a list published by the Entomological Society.—HY. ULLYETT, Folkestone, June 10th, 1871.

ENTOMOLOGICAL SOCIETY OF LONDON, 1st May, 1871.—PROFESSOR WESTWOOD, M.A., F.L.S., Vice-president, in the Chair.

Mr. Higgins exhibited collections of insects from Borneo and Natal. Among the latter were bred specimens of some of the larger *Bombyces*, and coloured representations of their larvæ, obtained by a process which was termed chromo-photography.

Mr. Meek exhibited the example of *Nyssia lapponaria* noticed in our two last Numbers.

The Rev. R. P. Murray exhibited a collection of insects recently formed by him in Switzerland.

Mr. Bicknell exhibited (for Mr. Cowan) an extraordinary example of *Gonopteryx rhamni*, captured at Beckenham, in March. This individual was a ♂, having the costal margin of each anterior wing, and of the right posterior wing, broadly but unequally suffused with crimson.

It having been suggested that the insect might possibly have been killed by cyanide of potassium, and had thus changed its colour, Mr. Cowan said he had killed it by means of chloroform, and moreover it was in the same condition when caught. Mr. McLachlan thought the wings had probably been in contact with some chemical substance during hybernation.

Mr. Stainton exhibited coloured drawings of the mines of *Micro-Lepidoptera* in leaves, sent from New Granada by Baron Von Nolcken.

Mr. Champion exhibited the British example of *Scydmanus rufus* noticed in the Ent. M. Mag. for May last.

Mr. McLachlan exhibited the tusk of an Indian elephant, lent to him by Dr. Slater. The root portion of this tusk was much eroded and blackened, and on the decayed portion were multitudes of large eggs, arranged side by side in rows. Dr. Slater desired information as to the insect or other animal that produced the eggs, but no member present was able to afford any information. It was suggested that the creature probably only took advantage of a diseased condition, and fed upon the morbid secretions, and did not in reality produce the decay. The occurrence was said to be not uncommon in India, and always with the female elephant.

* See the recent notices on our wrapper of the Catalogue of British *Neuroptera*, "part of a proposed General Catalogue of the Insects of the British Isles;" published by the Entomological Society of London.—EDS.

† Mr. Lewis has entered fully into this matter in a paper that will shortly be published by the Entomological Society.—EDS.

Mr. W. A. Lewis exhibited an earthen jar, like a tobacco jar, in which the inhabitants of Pekin were said to confine a large beetle, which they used for sporting purposes. One insect was placed in each jar, and, being fed only upon water, became very ferocious, when it was pitted against another. Professor Westwood reminded the meeting that the Chinese were already known to employ *Mantidæ* for fighting.

Mr. Lewis, Mr. McLachlan, and others, read extracts from the daily papers respecting so-called showers of insects or other organisms at Bath, the nature of which had baffled the 'scientific men' of that city. Professor Westwood thought the creatures might be *Branchypus stagnalis*, an Entomostracon.

Mr. Müller read notes on a gall on *Pteris aquilina*, found by Mr. Rothney, at Shirley, and referred it to *Diastrophus rubi*.

Mr. W. F. Kirby communicated notes on the synonymy of certain European *Lepidoptera*.

Professor Westwood read descriptions of some new species of exotic *Lucanidæ*.

Mr. H. W. Bates read a description of a new genus of longicorn beetles, from Matabili Land, South Africa, sent by Mr. Baines, remarkable for the enormously swollen third antennal joint: and also of a new species of *Mallaspis*, from Chiriqui.

5th June, 1871.—J. W. DUNNING, Esq., M.A., F.L.S., Vice-president, in the chair.

The Secretary read a letter from the Rev. L. Jenyns, of Bath, respecting the showers of 'insects' said to have occurred there. He had examined some of the creatures and found they were *Infusoria*, probably *Vibrio undula*, Müller. Some were swimming freely in the water, others were congregated in spherical masses, enveloped in a gelatinous substance. They fell during heavy rain after a violent squall of wind.

Mr. Butler exhibited a number of *Lepidoptera*, chiefly butterflies, upon which he and Mr. Meldola had experimented with dyes; the results were very striking. Having used a solution of soda in order to fix aniline dyes, he found the insects immersed in it discharged the colouring matter of the scales, and Mr. Meldola, by adding an acid, precipitated the pigment. It was also stated that exposure to the fumes of ammonia changed the colours.

Mr. Bicknell exhibited several examples of *Gonopteryx rhamni*, which he had exposed to cyanide of potassium, as suggested at the last meeting; the yellow was changed to orange-red. Mr. Smith said that cyanide changed the colour of wasps to vermilion.

The hope was expressed that these interesting experiments would not be taken advantage of by unscrupulous dealers, having regard to the prevailing disposition to obtain varieties of British *Lepidoptera*.

Mr. W. C. Boyd exhibited *Rumia cratægata* with the apical portion of one wing changed to brown; it was caught in that condition.

Mr. Müller exhibited the bell-shaped nest of a spider (*Aglena brunnea*); and also fresh galls on birch, produced by an undescribed species of *Phytoptus*.

Mr. Smith exhibited three rare species of *Hymenoptera*, sent by Mr. J. C. Dale, and captured at Glanville's Wootton. They were *Myrmecomorphus rufescens* (*Proctotrypidæ*), *Ichneumon glaucopterus*, and *Osmia pilicornis*.

Mr. Holdsworth, of Shanghai, communicated notes on the method employed by the Chinese in rearing the silk-producing *Bombyx Pernyi*.

Mr. Kirby communicated synonymic notes on *Lepidoptera*.

Mr. Baly communicated "Descriptions of a new genus, and of some recently discovered species of Australian *Phytophaga*."

Mr. Butler read "Descriptions of five new species, and a new genus, of diurnal *Lepidoptera*," sent from Shanghai by Mr. W. B. Pryer.

ON THE ORIGIN OF BRITISH LEPIDOPTERA.

BY R. C. R. JORDAN, M.D.

The British Isles were, without doubt, peopled with insects by migration from the continent; could we have the how, when, and where, of this exodus laid bare before us it would be of intense interest, and it may be, therefore, of some use to see what the British *Lepidoptera* teach us upon this subject.

It has seemed to me that they may be arranged under the following heads:—

1. Migrants of the glacial epoch.
2. Migrants of a warmer post-glacial epoch.
3. Direct migrants.
4. Western migrants.
5. Autochthones.
6. Naturalized species.

These may be discussed in the order here set down:

1. *Migrants of the glacial epoch.*

At a comparatively recent geologic period, England was a country of frost and ice, not differing much from what Greenland now is; plants flourished in our land before this, and probably, therefore, insects also; of these we have no known record that can be traced; they were destroyed by the age of ice which followed; but this very period of death has yet left an indelible stamp on both the flowers and insects of our land; to it we owe the saxifrages and other Alpine plants of our northern mountains, and to it with equal certainty we owe such insects as *Erebia Epiphron* and *E. Medea*, *Pachnobia alpina*, *Dasydia obfuscaria*, *Psodos trepidaria*, and probably other more exceptional instances, such as *Cænonympha Daraus*, *Larentia cæsiata*, *L. flavicinctata*, &c. If we take *Erebia Epiphron* (*Cassiope*) as an illustration, it is self-evident that it could not have reached Sea-fell from the Alps, or the Pyrenees, during existing circumstances. It is not found in the Scandinavian peninsula, so that we cannot suppose it to have come from thence; it is clear, therefore, that there must have been a very different condition, both of England and the continent, from the present, in the days when it migrated to this distant spot. The only probable time of its coming could be during this reign of ice, and it still remains as much a witness to the truth of this period as the glacier furrows left on the rocks themselves. A careful summary of the geographical distribution of our Alpine and sub-Alpine insects, both at home and on the continent, would give us juster ideas as to what species may with certainty

be referred to as remnants of this age. The absence of some, such as *Parnassius Apollo*, for example, is as notable as the presence of others. Curiously enough, there is not a single *butterfly* common to the British Isles and Iceland, though there seems no reason why *Colias Palæno* and *C. Phiconome*, at least, should not be found with us. The genus *Chionobas* has reached America from Europe evidently by this path, since *Chionobas Jutta* has occurred in the neighbourhood of Quebec, from whence I have received specimens: it is still an Icelandic insect, as also an inhabitant of the Scandinavian promontory. *Crymodes exulis* and *Plutella Dalella* are indeed common to Iceland and the British Isles, but the latter occurs also on the mainland of the continent. There is one plant, *Arenaria norvegica*, which is, I believe, not met with on the continent, and yet is found at Unst, in Shetland, but as far as the *Lepidoptera* are concerned there is no evidence of any Scandinavian migration; the names of some beetles, such as *Dytiscus lapponicus*, would seem to indicate otherwise; whether this be a fact I must leave, however, to the coleopterists.*

The absence of *Erebix* from the Welsh mountains must have some significance,—though it is difficult to say what.

2. *Migrants of a warmer epoch subsequent to the glacial period.*

Our Islands, bathed by the gulf-stream, on the western side especially, have winters far less severe than those of the northern half of central Europe; insects will therefore live with us which cannot bear the cold of these sterner seasons, yet for them to have reached us by migration must have required a time of more general warmth than the present.

Examples amongst the larger *Lepidoptera* of this group are rare, yet *Lithosia caniola* and *Tapinostola Bondii* may be quoted as marked instances; perhaps *Phlegophora empyrea*, and *Plusia Ni*, may also belong to this category; amongst the lesser *Lepidoptera*, *Dasyceira sulphurella*, *Elachista rufo-cinerea*, and *Lithocolletis messaniella*, give us good illustrations. It must be remembered that it does not follow that at this period of migration all the insects which came to England were of this delicate constitution, contemporaneously with them many of our more hardy insects came. The excellent paper by Mr. Barrett, in the February number of this magazine, on the entomology of Brandon, shows that here we have, as it were, a leaf out of an old black-letter book still preserved for us, and that we can read in it what the inhabitants of a sandy coast on the eastern shore of England then were; some like those

* *D. lapponicus*, recorded here from Inverness-shire, the Island of Mull, and Donegal, is found in Lapland, Sweden, Siberia, the Ost-see coast of North Germany (Eutin, Stettin), and Berlin; also in the extreme south-east of France (Dep. of Basses Alpes, Barcelonnette and Col de Lauzarnier).—E. C. R.

we have at present, others now peculiar to that district only ; that this warmer period lasted for a time long after this is shewn, as instanced in that paper by specimens of a fresh-water shell, now found in the Nile only, being common in a semi-fossilized condition in land that was *then*, without doubt, covered by the sea.

Examples of this group of migrants are indicated by an asterisk in Stainton's "Tineina of Southern Europe," wherein are thus summed up the reasons of their peculiar distribution : "I believe most of these are "species which require to feed up as larvæ during the winter, and cannot stand the prolonged severe cold of continental Europe." Surely all this group must have been sadly thinned by the past season !

3. *Direct migrants.*

The junction of England to the continent was probably on the eastern side, where the North Sea now rolls ; and, if the water drainings of Europe were conducted upon anything like its present plan, the British Channel must have been a vast estuary, leading to the mouth of the Rhine. Whilst England was thus part of the continent, there must have been a constant, steady migration, from the German side, of all the insects fitted to live in our island ; to these I have given the name of "direct migrants," and they constitute the large bulk of our *Lepidoptera*. A very happy illustration of each of the three classes here described is given in one genus of another order ; *Cordulia aenea* is a direct migrant, *Cordulia arctica* is an Alpine insect belonging to the glacial period, whilst *Cordulia Curtisii* affords a good example of a southern form, yet existing in the New Forest.

The insects of Ireland have, so to speak, been filtered through Scotland before reaching the Emerald Isle, the same applies also to the Isle of Man, yet this does not explain all the peculiarities of these two localities : a careful examination of the *Lepidoptera* of the Mull of Galloway, with a view to comparison, has not been made,—that is, at least, as far as is known to me.

4. *Western migrants.*

This group is doubtful ; yet, from analogies in the distribution of plants, it is extremely probable that such exists. In plants there are many, the occurrence of which in England we can scarcely explain on any other theory. The distribution of *Pinguicula lusitanica*, *Erica mediterranea*, *Ononis reclinata*, and many others, almost requires such a supposition. The very presence of such plants as *Erica cinerea* and *Agraphis nutans*, so rare in Germany, is suggestive of such a western migration ; on the other hand, it is fair to confess that in Connemara we find *Naias*

flexilis, a plant whose most noted continental locality is near Stettin. A western migration amongst insects is also rendered probable by the distribution of some species, such as *Trochilium philanthiforme* and *Polia nigrocincta*; but a careful comparison of the insects of Galicia, Brittany, Cornwall, and the Isle of Man, is yet to be made.

The question is here brought prominently before us as to whether there was ever any direct junction between our islands and the continent of America. The *Lepidoptera* of the two localities give us no proof of this; true, there are many insects common to England and America, but none that are peculiar to the two. With regard to *Chionobas Jutta* (and if *Colias Hecla* and *Colias Boothii* be the same, in its case also), we can say this insect must have reached America through Iceland; but this is not the case with any British insect; on the contrary, the presence of *Vanessa Antiopa*, with *Pieris Protodice*, so closely allied to *Pieris Daplidice*, *Libythea Bachmanni*, and *Deilephila Chamænerii*, *Libythea Celtis*, and *Deilephila galii*, seems to point to a place of junction decidedly to the south of our islands. Such a union would block up all passage between the northern and southern portions of the Atlantic, and there would be no possible gulf-stream on our western coasts: this might be, therefore, the very cause of the glacial period, and it must have been co-existent with it,—at all events the union could not have been at a later epoch.

It seems most probable, on a careful examination of the facts, that there has been a western migration of insects as well as plants, but that further investigation on this point is needed; we have no right, however, to expect to find our western insects in America. The *Lepidoptera* common to the two continents can all be accounted for by a more southern junction. This migration was, as said before, probably at or before the glacial period; and it is remarkable how little change has happened to the insects considering the immense lapse of time and the change of climate. The uniform tendency of that change in many cases is, however, worthy of note; thus, *Vanessa Antiopa*, *Vanessa cardui*, and *Melanippe hastata* are all darker than in Europe; this change is more marked in *Deilephila Chamænerii* and *D. galii*, *Phlogophora Iris* and *P. meticulosa*, and it becomes still more decided in *Vanessa Milberti* as compared with *V. urticae*, *V. J.-album* and *V. polychloros*, *Thanaos brizæ* and *Thanaos Tages*. Who, on seeing this, can risk the belief that these so-called representative species are in reality climatic varieties? Truth compels us to state that this change is not always constant; thus *Lycæna phlæas*, *Deilephila lineata*, *Scoliopteryx libatrix*, and *Eucosmia undulata* seem to have undergone no variation from the same species

in Europe, and *Smerinthus cæcimaculatus* differs little from our *Smerinthus ocellatus*, saving that the upper wings are crenate at the hind margin as in *S. populi*.

This, however, is a digression from the main subject of our paper; yet, before quitting it entirely, it may be as well for us to bear in mind that it is a pure assumption to state that the migration was from Europe to America, there may have been an endosmose into Europe, as well as an exosmose from it.

5. *The fifth group, Autochthones*, insects peculiar to our islands, is of course full of interest, yet they are few, and present no special characters.

Amongst the diurnal *Lepidoptera*, *Polyommatus Artaxerxes* is our only example, and this is regarded by most as a northern variety of *Agestis*,—which, indeed, the intermediate *Salmacis* seems to indicate: yet that such a remarkable variety should be found in Scotland only, whilst the usual type occurs in Sweden, Norway, and Northern Prussia, is a fact quite as strange and worthy of note as if it were a fixed species. The dark forms of *Melitæa Artemis* are, as far as I can discover, also unknown on the continent, but I have never seen Scandinavian specimens.

Amongst the *Nocturni* there are two peculiar to our islands, *Lithosia sericea* and *Lithosia griseola*, var. *stramineola*. *Lithosia sericea*, very limited in its distribution in England, has not long been remarked as a distinct species, and may possibly have been overlooked. The variety *stramineola* is not, like *Artaxerxes*, in any way climatic, since it occurs alike in Devonshire and in the fens of Norfolk: it is, indeed, one of those strange variations in which an aberrant form of a species belonging to one group somewhat approaches another group of the same genus.

Amongst the *Geometræ* there is no species peculiar to the British Isles, and the same may be said of the *Pseudo-bombycidæ* and *Drepanulæ*.

Agrotis Ashworthii seems unknown on the continent; it is a western species, and may be yet found in Spain. It is a species of much interest, confined to a little tract in Wales, the larva differing much from that of its nearest British ally, *Agrotis lucerneæ*, from which it is widely distinct.

Noctua subrosea is doubtful, as it has been taken in Russia. It is now very rare in England, and perhaps may soon be extinct.

Dianthæcia Barretti: the discovery of a peculiar British *Dianthæcia* in Ireland and the Isle of Man, which for some reason or other unknown

to us seems to be a focus of this genus, is most remarkable, and the peculiar varieties of *consersa* found in Devon add in no small degree to the interest. If *capsophila* be only a variety, and not a species, it is none the less peculiar to our islands.

Amongst the *Deltoides* and *Pyralides* there is no peculiar species.

Amongst the *Crambites* there are several, but none probably really peculiar, as they are *Scopariæ* and *Phycitæ*, insects which have been little attended to, and are very likely to have been passed over.

Among *Tortrices*, *Argyrolepia æneana*, though figured by Hübner, is not now known to occur on the continent.

In the *Tineina* it is probable that there is no species peculiar to England, though many in the genera *Gelechia*, *Coleophora*, and *Elachista* have as yet never been taken elsewhere.

Amongst the *Pterophori*, *Oxyptilus teucris* is as yet only known as British.

These genuinely British insects must always have a peculiar interest, and therefore I have attempted to construct a table of them; every one who looks upon it without prejudice, must feel that the greater part are likely to be found elsewhere, when the whole of Europe is explored.

List of *Lepidoptera* as yet only taken in Great Britain:—

Polyommatus Artaxerxes.	Micropteryx salopiella.
Lithosia sericea.	Gelechia celerella.
„ griseola, var. stramineola.	„ divisella.
Agrotis Ashworthii.	„ fumatella.
Dianthœcia Barrettii.	„ politella.
„ capsophila (var.)	„ ocellatella.
Scoparia atomalis.	„ fraternella.
„ basistrigalis.	„ lathyrella.
„ ulmella.	„ tarquiniella.
„ gracilalis (doubtful).	„ immaculatella.
Trachonitis Pryerella.	„ Sircomella.
Homœosoma senecionis.	Cecophora Woodiella.
„ saxicola.	Glyphipteryx cladiella.
Melissoblaptēs cephalonica.	„ schœnicolella.
Coccyx vernana.	Argyresthia purpurascens.
Dierorampha flavidorsana.	Ornix devoniella.
Eupœcilia Degreyana.	„ Loganella.
„ albicapitana.	Coleophora genistæ.
Argyrolepia æneana (doubtful).	„ inflatæ.
Incurvaria tenuicornis.	„ albicosta.

Elachista Megerlella.	Lithocolletis ulicicolella.
„ Gregsoni.	„ caledoniella.
„ subnigrella.	Cemiosoma lathyrioliella.
Lithocolletis viminiella.	Nepticula poterii.
„ nigrescentella.	„ atricollis.
„ irradiella.	Oxyptilus teucarii.
„ triguttella.	

It is not supposed that these are all peculiar to our islands. *Melissobiaptes cephalonica* is, of course, only an accidental importation and not British at all; but it is important to have as complete a list as possible, and then it becomes easy to register any additions, or, more probably, any elisions, which time renders necessary. Yet even now it is not going too far to say that our isles present no focus or centre for any peculiar group of *Lepidoptera*.

6 *Naturalized species.*

In a country like England, where civilization has been the growth of centuries, and from which the mainland of Europe is so easily reached, it is now utterly impossible to estimate with truth what the effects of naturalization may have been: when we find our social insects as they may be termed, so rapidly acclimatized in America with a distance of eleven days between us, how much the more must the same be expected with a distance of not nearly as many hours from the continent! *Pieris rapæ*, *Sesia tipuliformis*, and *Semasia pomonella* have now a firm home across the Atlantic, and *tipuliformis* has even found a lodging in the Antipodes. In our own days, *Dreissena polymorpha* amongst Molluscs, *Cynips Kollari* amongst insects, and *Anacharis alsinastrium* amongst plants, have so naturalized themselves in our island, that it would be utterly impossible to eradicate them. Of these examples, *Cynips Kollari* is to me of special interest: although noticed by me in Devon, certainly for forty years at the least (since we used its galls for marbles when I was quite a child), yet it did not reach Birmingham until 1860, when it was first noticed by me in the town, a fact not to be wondered at, considering how often its galls were brought from the south by tourists; it was not, however, until the autumn of 1866 that it was first seen by me invading Birmingham, along the hedges on the Worcestershire side; the two streams have since met, and *C. Kollari* is to be found both in town and country. It is not impossible that *Pieris rapæ* and *P. brassicæ* may have come in with the pot-herbs of the old Romans, for we know not what human agency may have done in the lapse of centuries; yet, as naturalization affects almost entirely such insects as haunt the neighbourhood of man, it scarcely touches the general conclusions at which we have arrived.

The few stragglers, as for example, *Lycæna bætica*, which may be borne by winds across the narrow separating channel, can hardly be called English; a few species may, however, have taken root when transplanted in this chance way: such, however, must be a rare event, the males in most cases being, of necessity, wafted across rather than the female.

All our native insects can probably be grouped under one or other of these divisions; but there is, in conclusion, another point which will obtrude itself upon our notice, namely—Are we to expect any further changes in our lists, besides those brought by fresh discovery? Will the *Lepidoptera* of the year 2000 be the same as those of 1871? To answer this we must look back:—since our own days, *Lycæna Acis*, *Chrysophanus dispar*, and *Deilephila euphorbiæ* have nearly disappeared from our island; for the scarcity of the first of these we can give no reason; the second, a very local species, seems to have been exterminated by the over zeal of entomologists (a zeal that will probably destroy *Lycæna Arion* also), aided by an unusual flood; *Deilephila euphorbiæ*, like *Pieris Daphidice*, had a doubtful hold upon our island, as on the very verge of its northern range, just, indeed, as one of the *Euphorbiæ*, *E. peplis*, which still lingers as if loth quite to depart from the sands of Cornwall. Probably the lapse of time may destroy a few of these species, some of the very local insects may be lost by zeal, cultivation, or drainage, and we shall gain a few American or continental species, such as, perhaps, *Pempelia grossulariæ* or *Anchylopera fragariæ*, insects of a domestic type feeding on plants either of the kitchen or flower garden. The changes will probably be few, and it is consoling to think that the Lepidopterists of a future century will still be able to refer with satisfaction and profit to Doubleday's list and Stainton's Manual.

Birmingham: June, 1871.

OBSERVATIONS ON THE EGGS OF *VANESSA URTICÆ* AND *POLYCHLOROS*,
WITH REGARD TO SEPP'S FIGURES.

BY THE REV. J. HELLINS, M.A.

Except, perchance, in the way of recording varieties, I did not, until lately, suppose there was much left to be said about these butterflies; they had surely been *done* long ago! But, chancing to read in a recent publication the curious and striking *fiction* that the *pear-shaped*, *smooth* egg of *polychloros* is very different from that of *urticæ*, I began to fancy there was yet room for a few words to set things right. So

far as I can discover, a mistake made in one of Sepp's plates 109 years ago, has been accepted without question, and reproduced in various forms up to the present date ; at least, he gives figures which correspond exactly to modern descriptions, and one could not resist the conclusion that it was found easier to copy, than to make original research. But, being unwilling to depend on memory alone, I waited till this spring to get eggs of both species ; and in this I have succeeded, not without trouble, for common things somehow grow rare just when you want them, and, in fact, I should have failed, had I not been helped by correspondents, whose names are wont to appear in these pages at the end of more important announcements than the capture of large or small "tortoise-shells !"

Polychloros I found on the wing throughout April, but I could not induce the female to lay in confinement, and was therefore obliged to squeeze the eggs from them after death ; this circumstance prevents me from speaking with certainty as to their colour, but not as to their form, which is like that of a short, squat barrel, but ribbed with eight or nine longitudinal even ridges, which extend over the flattened top, but appear to cease on reaching the base ; the space between the ribs is transversely fluted, but much more finely than in the egg of *urticæ*, although the latter is not half the size ; the colour apparently is a dull green. The whole batch of eggs appears, from a specimen kindly furnished to me by Mr. Harwood, to be deposited much after the style of *Clisiocampa neustria*, in close, regular order on a twig of elm, aspen, &c.

Urticæ I saw first in March, but after that I saw no more till near the end of May, though since then I have occasionally sighted one or two up to the beginning of July ; the females made no difficulty in depositing their burden in an *irregular mass* on the *under-side* of *nettle leaves* ; the egg is somewhat pouch-shaped, being oblong and fuller at the base than above ; the base is not flattened, but rounded and smooth, and just where it slopes into the sides the ribs (seven, eight, or nine in number), commence ; these continue over the top for about half its diameter, and increase in prominence as the egg itself diminishes, until at last they quite stand out like clear glass beading ; the space between the ribs is boldly fluted ; the colour is a pale yellowish-green.

The egg figured by Sepp for *urticæ* is doubtless that of *polychloros* ; whilst that figured by him for *polychloros* I can refer to no form with which I am myself acquainted ; I can only *guess* that it represents a somewhat shrivelled egg of *urticæ*, and that perhaps his microscope was to be found fault with more than himself ; for, certainly, the majority of his figures have not been surpassed for accuracy up to the present time.

Exeter : July 7th, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 6).

BY H. W. BATES, F. Z. S.

Genus LACHNOPHORUS, Dej.

LACHNOPHORUS LÆTUS, n. sp.—*L. eleganti* (Brullé) *affinis*; *capite et thorace rufis, hoc basi olivaceo-aneis*; *elytris olivaceo-aneis, marginibus, macula elongata humerali, et tridente apicali, flavo-testaceis*; *antennis pedibusque flavo-testaceis, illis apice paululum obscurioribus*; *corpore subtus nigro-aneis, thorace lateribus abdomineque apice rufo-testaceis*; *capite latitudine thoraci æquali, oculis prominentibus*; *thorace cordato, sub-nitido, subtilissime rugoso-punctulato, elytris capite thoraceque conjunctis duplo longioribus, amplis, creberrime granulatis, punctato-striatis, apice obtuse rotundatis*; *corpore toto flavo pubescenti.*

Long. 4 lin. 1 exempl.

The pale marks of the elytra (which, however, are doubtless variable) consist of a lateral border, entire from the middle of the base to the apex, but enlarged at the shoulders, into an elongate spot occupying four or more interstices, contracted in the middle into a marginal line, and expanding at the apex into a spot occupying nearly a third of the elytron; this apical spot is dusky in the middle and dentated on its anterior edge. The elytra have no large punctures or foveæ. The species much resembles *Anchonoderus concinnus*, of Reiche, differing chiefly in colours.

Banks of R. Tapajos.

LACHNOPHORUS AENEICOLLIS, n. sp.—*L. læto proxime affinis, differt solum capite thoraceque viridi-aneis nitidis, hoc marginibus anguste, illo epistomate et partibus oris, flavo-testaceis*; *antennis pedibusque flavo-testaceis*; *elytris amplis, quadrato-ovatis, aneis, marginibus pallidis, pone humeros dilatatis fasciamque brevem interdum formantibus, apud apicem in maculam magnam, medio infuscatam, expansis.*

Long. $3\frac{1}{2}$ lin. ♂ ♀. 6 exempl.

The head and thorax are very finely punctured, and the elytra densely granulated as in *L. lætus*. The thorax is very small compared with the bulk of the body, and is more dilated in front and contracted behind than in *L. lætus*.

St. Paulo and Ega, Upper Amazons, in moist places at edge of the river, under detritus, abundant, and offering no variety tending to connect it with *L. lætus*. Coll. Ed. Brown, Bates, and others.

L. ELEGANS, Brullé, Voyage de d'Orbigny, Ins. p. 25, pl. iii, f. 3.
—Bolivia interior.

L. CONCINNUS, Reiche, Revue Zool. 1843, p. 39.—Equador.

L. (?) APICALIS, Id., New Granada.

LACHNOPHORUS QUADRINUS, n. sp.—*Cupreo-fuscus, nitidus, passim grosse punctatus breviterque pubescens*; *capite latitudine thoraci vix æquali*

grossissime punctato, fronte lævi, utrinque late sulcata, juxta sulcum carinata; thorace lato, antice valde rotundato, postice fortiter constricto, supra rosse punctato, medio canaliculato; elytris distincte punctatis, punctulatis, utrinque tri-foveatis, maculisque duabus latis, rufo-testaceis (quarum una curvata humeralis, altera obliqua sub-marginalis prope apicem) ornatis; antennis, partibus oris, pedibusque rufo-testaceis, femoribus pallidioribus; corpore subtus nigro, punctato. Long. $2\frac{3}{4}$ —3 lin.

Rio Janeiro, Bahia. Apparently not uncommon. In my own collection and that of Mr. Grut.

LACHNOPHORUS QUADRINOTATUS, n. sp.—*Nigro-cæneus, pubescens, capite distincte parce punctato, nitido, antennarum articulis 4 basalibus pedibusque rufo-testaceis, his geniculis tibiæ tarsorumque apicibus obscurioribus; thorace capiti latitudine sub-æquali, cordato, subtiliter parce punctulato et medio transversim leviter plicato; elytris oblongo-ovatis, striis basin versus grosse punctatis, interstitiis punctulatis, absque foveis; utrinque maculis duabus rufo-testaceis (quarum una elongata prope humerum, interstitia 6—7 vel 6—8, altera multo brevior prope apicem, interstitia 6—8, occupans) ornatis; palpis piceis.* Long. 2 lin.

Agrees with *L. submaculatus* in form of body, but differs in the light colour of the legs and in the absence of foveæ from the elytra; the interstices are very distinctly punctulated, and the anterior elytral spot is placed close to the shoulder, instead of near the disc, at one-fourth the elytral length, as in *L. foveatus* and *L. submaculatus*.

Rio Janeiro. Taken by Mr. Squires and Rev. H. Clark. In my own collection and that of Mr. Grut.

LACHNOPHORUS FOVEATUS, n. sp.—*Fusco-cupreus, sub-nitidus, dense fusco pubescens; capite thoraceque latitudine æqualibus, subtiliter creberrime punctulato-rugosis: hoc alutaceo, cordato, antice modice rotundato-dilatato; elytris amplis, sub-quadratis, profunde striatis, striis grosse punctatis, interstitiis sub-rugosis, plicatis, haud distincte punctatis, utrinque foveis magnis tribus, fuscisque duabus brevibus curvatis, rufo-testaceis (quarum una ab humero distans e maculis 4—5 parvis, altera discoidalis posterior e maculis 3—4 formata) notatis; antennarum articulis 4 basalibus femoribusque rufo-testaceis, palpis tibiis et tarsis piceis.* Long. $2\frac{1}{4}$ —3 lin. ♂ ♀. 10 exempl.

Distinguished from *L. quadrimus* by the great difference in its punctuation, and by the reddish spots of the elytra, which, instead of being broad, short, streaks, consist only of a number of small spots on adjoining interstices: the striæ near the suture are very deeply impressed. *L. impressus*, Brullé, is described as without elytral spots; in none of my specimens of *L. foveatus* are the spots wanting, otherwise his description agrees pretty well with my insect.

Upper Amazons. Abundant.

LACHNOPHORUS TIBIALIS, n. sp.—*Fusco-cupreus, sub-nitidus*; capite thoraceque latitudine æqualibus, illo distincte passim, hoc subtilissime leviter punctulato, rugoso, nitido, antice dilatato-rotundato; elytris quadrato-orati punctato-striatis, interstitiis punctulatis, leviter plicatis; utrinque foveolis parvis et fasciis duabus brevibus rufo-testaceis e maculis formatis, interdum indistinctis; antennis nigris, articulis 4 basalibus rufo-piceis, palpis piceis pedibus fusco-piceis, tibiis (apice excepto) flavo-testaceis.

Long. $2\frac{1}{2}$ lin. Exempl. plurima.

Closely allied to *L. foveatus*, presenting scarcely any difference in the elytra, but the thorax is not alutaceous and sub-opaque as in that species, and the legs are of a different colour.

St. Paulo & Pebas, Upper Amazons. In my own collection and that of Mr. Ed. Brown.

LACHNOPHORUS SUBMACULATUS, n. sp.—*Angustior, obscure nigro-æneus, hirsutus, antennarum articulis 4 basalibus, palpis, pedibusque picco-testaceis, tibiis apice tarsisque obscurioribus*; capite parce haud profunde punctato, nitido; thorace antice modice rotundato-dilatato, postice haud abrupte, stricto, supra leviter ruguloso, nitido; elytris oblongo-oratis, fortiter striatis, striis basin versus grosse punctatis, interstitiis punctulato-plicatis, utrinque tri-foveatis, maculisque duabus parvis rufo-testaceis (quarum una anterior interdum deficiens, interstitia 6—8, altera posterior 5—7, occupans) notatis.

Long. $1\frac{3}{4}$ — $2\frac{1}{2}$ lin. 12 exempl.

The most common and generally distributed species throughout the Amazons region, in moist, muddy places. It is likely to be the same as Gory's *bipunctatus*, if we may assume the description of that author to be inaccurate in several essential points. According to that description, the legs would be black and the three basal joints only of the antennæ reddish; but in none of my specimens is there any approach to blackness in the colour of the legs; they are always (trochanters included) of a pallid-brown hue or reddish-testaceous with the base and apex of tibiæ slightly darker. The small anterior pale spot of elytra might readily be overlooked, as it is often reduced to two specks on adjoining interstices, and in one of my specimens disappears altogether.

It is just possible that this may be the *Anchoderus* (sic) *submaculatus*, Motsch., Bull. Mosc., 1864, p. 334.

LACHNOPHORUS OCHROPUS, n. sp.—*L. sub-maculato proxime affinis, differt pedibus clare flavo-testaceis, &c.*: nigro-æneus, pubescens; capite thoraceque latitudine sub-æqualibus, sub-crebre punctatis, hoc ruguloso sed nitido, cordato; antennarum articulis, præter 4 basales flavo-testaceos, rufo-piceis; palpis flavo-testaceis; elytris oblongo-oratis, striis (apice excepto) grosse punctatis, interstitiis punctulatis, utrinque tri-foveatis, maculisque duabus brevibus, rufo-

testaceis (quarum una anterior, discoidalis, interstitia 5—8,—interdum multo minor,—altera discoidalis prope apicem interstitia 5—7 occupans) ornatis.

Long. 2 lin. 4 exempl.

Ega and St. Paulo, Upper Amazons.

LACHNOPHORUS LÆVICOLLIS, Reiche, Rev. Zool., 1843, p. 180. This small species, distinguished by its impunctate head and thorax and spotless elytra, seem to have a wide distribution in South America. Specimens in my collection from St. Catharine and Rio Janeiro in South Brazil, and from Ega, perfectly agree with Reiche's description of New Granada examples. I suspect *L. niger* of Gory (from Cayenne) to be the same species; but, from the well-known and never failing inaccuracy of this author's descriptions, no definite conclusion can be drawn regarding it; he mentions, however, the head as punctured, whereas in *L. levicollis* it is quite smooth. There are specimens from Cayenne in Mr. Brown's collection, which agree precisely with Gory's description, except that the elytra have on each side a row of large foveæ, a feature that may have been omitted by the describer.

LACHNOPHORUS PICTIPENNIS (Chevr. M.S.), n. sp.—*Gracilis, nigro-æneus, pubescens; antennarum articulis 4 basalibus (ceteris piccis) palpis pedibusque pallido-testaceis, geniculis fuscis; capite punctato-scabroso, opaco; thorace capite angustiori, graciliter cordato, minus dense punctato, sub-nitido, utrinque sulco lato sub-marginali; elytris oblongis, striis exterioribus basin versus grosse crenato-punctatis, interstitiis confuse punctulatis, utrinque tri-foveatis, dimidio basali et sutura fere usque ad apicem testaceo-rufis, macula laterali post medium nigra, postice fascia maculari albida marginata, apice flavo-testaceis; abdomine apice rufescenti.*

Long. 2 lin.

Mexico, from M. A. Boucard's collection. The punctuation of the elytral interstices is not in a single distinct row as in *L. elegantulus*, but fine and confused. The lateral sulcus of the thorax, besides colouration, &c., is a good distinguishing character. In my own collection and that of Mr. Edwin Brown.

LACHNOPHORUS TESSELLATUS, Motschulsky, Bull. Mosc., 1863, 221 (*Stigmaphorus*, id.). An ill-described species, apparently distinct; found at Panama.

LACHNOPHORUS TENUICOLLIS, Dej., Species Gen., v., p. 100.

Dejean failed to notice that this species, described by him as a *Bembidium*, belonged to his own genus *Lachnophorus*. It is closely allied to *L. pictipennis*, but wants the lateral sulcus to the pronotum. The elytra are pale fulvo-testaceous, shining, with an indistinct dusky fascia behind the middle, preceded and followed by white spots. It is found in the most southerly provinces of Brazil. In my own collection and that of Mr. Edw. Brown.

LACHNOPHORUS MACROSPILUS, n. sp.—*Gracilior, saturate-æneus, flavo-pubescent; capite passim crebre punctato, antennarum articulis 4 basalibus palpis pedibusque clare fulvo-testaceis; thorace capite paulo angustiori, cordato, postice gradatim angustato, crebre punctato, sub-ruguloso, sub-nitido, linea laterali utrinque elongata impresso; elytris elongato-oratis, striis (apice exceptis) fortiter punctatis, interstitiis rugulosis, utrinque tri-foveatis, maculis magnis duabus, testaceo-fulvis (quarum una prope basin rotundata, interstitia 2—8, altera sub-apicalis, fasciam curvatam formans, interstitia 1—8 occupans) ornatis.*
Long. $2\frac{1}{2}$ lin. 6 exempl.

The anterior elytral spot is very large, occupying nearly a third of the surface of each elytron.

St. Paulo, Upper Amazons. In my own collection and that of Mr. Grut.

LACHNOPHORUS ORNATUS, n. sp.—*Gracilis, saturate viridi-æneus, flavo-pubescent; capite thorace latiori, crebre rugoso-punctato; thorace anguste cordato, convexo, crebre transversim ruguloso; elytris elongato-oratis, striis (apice excepto) grosse punctatis, interstitiis uniserialim distincte punctatis et plicatis, utrinque tri-foveatis, maculaque magna laterali ab humeris distant, et apice late flavis; antennis, palpis, pedibusque testaceo flavis.*
Long. $2\frac{1}{2}$ lin. 6 exempl.

A very distinct and handsome species; the anterior elytral spot extends from the 5th to 9th interstices, and is elongated only on the 7th and 8th, the lateral margin exterior to this is white nearly to the shoulder, and again exterior to the apical patch. The elytra are different in form from the other species, the base being oblique instead of straight between the thorax and shoulders.

St. Paulo, Upper Amazons. In my own collection and that of Mr. Grut.

Kentish Town: July, 1871.

DESCRIPTIONS OF NEW SPECIES OF AFRICAN DIURNAL LEPIDOPTERA BY CHRISTOPHER WARD.

(Continued from page 36).

PIERIS RHODANUS, n. s.

♂. *Upper-side*: both wings clear white, fore-wing bordered on the outer margin with black, broad at the apex, rather broken towards the anal angle; hind-wing, on the outer margin seven distinct black spots, which are rather pointed on the inner side, the uppermost and lowest the smallest.

Under-side: fore-wing clear white with apex tinged with light yellow, on the margin at the end of each nervule a small black spot, the three lower ones having joining them on the inner-side a larger spot, base marked with orange; hind-wing, cream-white, the costa edged with orange, hind margin with seven black spots on the nervules, the three upper the smallest.

- ♀. Resembles the male, but on the upper-side the base of fore-wing is bright orange, the black at the apex is mingled with grey; on the under-side the base of both wings is more strongly marked with orange, and the black spots round the hind margin are larger and rounder.

Expanse 2 inches.

Habitat: Camaroons.

Allied to *Pieris Eudoxia*.

PIERIS CEBRON, n. s.

- ♂. *Upper-side*: yellowish-white; fore-wing, anterior and hind margin edged with black, base yellow, which is narrowly continued to centre of anterior margin; hind-wing, inner margin broadly marked with yellow, also narrowing round the hind margin, which is bordered with black, broken towards the anal angle into longitudinal spots.

Under-side: fore-wing white, base and apex yellow, outer margin edged with black spots; hind-wing, yellow, outer margin with seven distinct black spots.

Expanse $2\frac{2}{10}$ inches.

Habitat: Camaroons.

PIERIS CAPRICORNUS, n. s.

- ♂. *Upper-side*: fore-wing, white, apex black, narrowing down the posterior margin; hind-wing, white, the margin with a small, black spot at the end of each nervule, the three upper and the lowest the smallest.

Under-side: white, base of fore-wing slightly marked with orange, costa of hind-wing more strongly marked; outer margin of fore-wing with small, black spots at the end of each nervule.

- ♀. *Upper-side*: yellowish-white: fore-wing, outer margin broadly marked with greyish-black, the cell and inner margin greyish-black; hind-wing, more tinged with yellow, outer margin bordered with seven large, black spots, the three upper running into each other; within, a second band of six black spots.

Under-side: white; fore-wing, the costa edged with orange, a large, black spot in centre of wing, with a smaller one placed above and below it; outer margin of both wings tinged with yellow and edged with black spots; on the hind-wing a second inner band of black spots, which are edged with yellow on the inner side.

Expanse $2\frac{1}{2}$ inches.

Habitat: Camaroons.

In some specimens the colour of the fore-wing of the female, on the upper-side, is a bright orange. The female described was taken *in copulâ*.

ERONIA VERULANUS, n. s.

- ♂. *Upper-side*: bluish-white; fore-wing, outer margin and apex broadly marked with black; hind-wing, outer margin with six small, black spots.

Under-side: both wings clear lustrous white.

- ♀. *Upper-side*: fore-wing, yellow, outer margin broadly marked with black, containing two yellow spots near the apex; hind-wing, white, edged with seven triangular, black spots.

Under-side: fore-wing, yellow, the apex and outer margin white, with three large, black spots on the inner side; hind-wing, clear lustrous-white.

Expanse, ♂, $2\frac{7}{10}$ in.; ♀, $2\frac{4}{10}$ in.

Habitat: Camaroons.

Allied to *Eronia Thalassina*.

ACRÆA PENTAPOLIS, n. s.

Both wings transparent, nervures light brown; fore-wing, upper-side with two narrow bands of light brown, crossing diagonally outwards, one through the cell, one beyond it, outer margin bordered with same color.

Hind-wing: outer margin broadly marked with light brown, near the base four spots of dark brown, below the cell a larger spot placed between each nervule.

Under-side resembles upper-side.

Expanse 3 inches.

Habitat: Camaroons.

A very high flyer.

ACRÆA PENELEOS, n. s.

Upper-side: fore-wing, transparent; nervures, apex, outer and inner margin broadly marked with brown, two red spots near the anal angle; hind-wing, clear, bright red, bordered on the outer margin with dark brown; base, brown, with numerous black spots.

Under-side: fore-wing, apex and outer margin broadly marked with light brown; hind-wing lighter brown, base with numerous black spots, outer margin bordered with darker brown.

Expanse $2\frac{1}{4}$ inches.

Habitat: Camaroons. Old Calabar.

[To be continued.]

BRITISH HEMIPTERA. ADDITIONS AND CORRECTIONS.

BY J. W. DOUGLAS AND JOHN SCOTT.

(Concluded from page 29).

Section.—ANTHOCORINA.

Family.—MICROPHYSIDÆ.

Genus.—PSEUDOPHLEPS, n. g.

♂. *Head* broad, short, convex; *face* slightly narrowed in front, central lobe somewhat narrow and elongate, in front obtuse; side-lobes narrow, triangular, distinctly shorter than the central one. *Antennæ* stoutish, first joint reaching to the end of the face, second slightly clavate, more than twice the length of the first, third and fourth sub-equal, the former thinner than the latter, and the bases of both slender. *Eyes* moderately large and prominent; *rostrum* stout, curved, reaching to the first pair of coxæ.

Thorax: *pronotum* convex, broader than long, trapeziform; anterior margin constricted into a narrow collar, posterior margin concave. *Scutellum* short, triangular, almost equilateral, the base convex transversely. *Elytra* longer than the abdomen; *clavus* somewhat broad, widest across in a line with the scutellar angle; *corium*, anterior margin convex before its junction with the cuneus, where

it is somewhat contracted; *embolium* long, concave; *cuneus* narrower at the base than the anterior margin of the corium; *Membrane* somewhat broad, base in the middle with a Y-shaped cell, from which proceed three short, indistinct, pustulated nerves. *Legs* long, thin; *thighs* cylindrical; *tibiæ* slightly thickened at the apex, third pair somewhat bent; *tarsi* slender.

Species 1.—PSEUDOPHLEPS INCONSPICUUS, n. sp.

♂ Black; dull.

Head shining. *Face*: apex of the central lobe reddish. *Antennæ*: apex of the second joint narrowly reddish; *ocelli* red; *rostrum* pitchy-black.

Thorax: *pronotum* shining, in the middle with a deep transverse incision, beyond which the disc is flattened and faintly wrinkled transversely. *Elytra*: *clavus* and *corium* brown-black, anterior margin of the latter black; *cuneus* reddish-brown, base brown-black; *membrane* fuscous, iridescent, basal cell-nerves black; the short, pustulate, longitudinal nerves, and a narrow triangular patch below the apex of the cuneus, whitish; *legs* dark brown-black.

Abdomen reddish above, underneath darker.

Length $\frac{7}{8}$ line.

Smaller and narrower than *Myrmedobia coleoptrata*, to which it is allied, and with shorter and stouter antennæ than that species; the shape of the basal cell of the membrane and the almost obsolete nerves also prove its distinctness.

The description has been drawn up from two ♂ specimens, not in good order, in the collection of Mr. E. Saunders, taken by Mr. Crotch some years ago at Weymouth, under seaweed. No doubt this was either accidental, or the seaweed had been taken possession of by a colony of ants with whom they were living.

Corrections in Synonymy.

SCUTATINA.

EURYGASTER NIGER.

Tetyra nigra, Fab., S.R. 136, 39. *T. maura*, Fab. (pars) S. R. 136, 36. *Eurygaster hottentottus*, Fieb., D. and S. (nec Fab.). *E. niger*, Stål, Hem. Fab. i, 12, 3.

STRACHIA FESTIVA.

Cimex festiva, Lin.

Strachia ornata, Flor, D. and S. (excl. syn. of *S. ornata*).

PODISUS, H.-Schf., Fieb., Stål=ASOPUS (*luridus*), Fieb., D. and S. (nec Burm.).

PIEZODORUS LITURATUS.

Cimex lituratus, Fab. E.S. iv, 114, 34, S.R. 170, 84. *Piezodorus De Geeri*, Fieb. *P. purpureipennis*, Dall., D. and S. (nec De G.). *P. lituratus*, Stål, Hem. Fab. i, 31, 1.

ACANTHOSOMA TRISTRIATA.

Cimex tristriatus, Fab. Mantiss. ii, 293, 135, E.S. iv, 112, 125, S.R. 169, 74. *Cyphostethus lituratus*, Fieb. *Acanthosoma picta*, Newm., D. and S. *Cyphostethus tristriatus*, Sâtl, Hem. Fab. i, 39, 1.

PENTATOMA VIRIDISSIMA.

Cimex viridissima, Poda. *C. prasina*, Fab., Fieb., (nec Lin.) *C. dissimilis*, Fab., Fieb., D. and S. *Palomena viridissima*, Muls. and Rey, Stâl.

BERYTINA.

NEIDES PARALLELUS, Fieb.

Neides depressus (Fieb.), D. and S.

TINGIDINA.

TINGIS, Fab.=MONANTHIA, Fieb.

Stâl says "*Tingis cardui* a Fabricio ipso typus generis describitur," but not so in the Systema Rhyngotorum, where the genus was characterised, and the first, or typical, species is *Cimex clavicornis*, Lin.

Tingis Fabricii, Stâl=*Monanthia costata*, Auct.

GALEATUS, Curt., Stâl=TINGIS, Fieb., D. and S., &c.

Lacometopus costatus=*Tingis costata*, Fab.

These changes will only be valid if Stâl's view of the type of the genus *Tingis* be adopted.

CAPSINA.

PHYTOCORIS FLORALIS.

Cimex floralis, Fab., Mantiss. ii, 303, 248. *Lygæus floralis*, Fab., E.S. iv, 171, 127; S.R. 235, 156. *L. vividus*, Fab., S.R. 237, 170. *Phytocoris divergens*, Fieb., D. and S. *P. floralis*, Stâl, Hem. Fab., i, 87, 1.

MACROCOLEUS SOLITARIUS, Mey., Fieb., D. and S.

Amblytylus affinis, Fieb., D. and S. (a deeply coloured var.).

PSALLUS ALNICOLA, D. and S. (emend.).

Psallus alni, D. and S. (nec Fab.).

PSALLUS ALNI.

Lygæus alni, Fab., E.S. iv, 175, 143; S.R. 238, 177. *Psallus alni*, Stâl, Hem. Fab., i, 88, 1. *P. querceti*, Fieb., D. and S.

ORTHOCEPHALUS CORIACEUS.

Acanthia coriacea, Fab., E.S. iv, 69, 7. *Salda coriacea*, Fab., S.R. 115, 8. *Orthocephalus mutabilis*, Fieb., D. and S. *O. coriaceus*, Stâl, Hem. Fab., i, 88, 1.

ANTHOCORINA.

TEMNOSTETHUS NEMORALIS.

Acanthia nemoralis, Fab., E.S. *Salda nemoralis*, Fab., S.R. *Temnostethus lucorum*, Fieb., D. and S. *T. nemoralis*, Stâl, Hem. Fab. i, 90, 1.

ANTHOCORIS AUSTRIACUS.

Lygæus austriacus, Fab., S.R. 239, 181. *Anthocoris nemoralis*, Fieb., D. and S.

LYCTOCORIS CAMPESTRIS.

Acanthia campestris, Fab. E.S. *Salda campestris*, Fab., S.R. *Lyc-tocoris domesticus*, Schill., Fieb., D. and S. *L. campestris*, Stål, Hem. Fab. i, 90, 1.

OCULATINA.

SALDA LATERALIS.

Salda lateralis, Fall., Sahlb., Fieb., D. and S., Stål, Vet. Ak. Förh. 392, 10 (1868). *S. eburnea*, Fieb. *S. pulchella*, Curt., H.-Schf., Fieb., D. and S.

SALDA MARGINALIS, Fall., Stål, D. and S.

Salda costalis, Sahlb.

Stål also quotes as synonymous *S. marginella*, Fieb., but we have an English specimen, so named by Fieber himself, which is certainly different, and which we have hitherto refrained from noticing, because we are not satisfied that it is distinct from *S. saltatoria*, which it more nearly resembles.

SALDA SCOTICA.

Acanthia scotica, Curt. *Salda scotica*, Stål, Vet. Ak. Förh., 389, 4 (1868). *S. riparia*, Fieb., Wien. Ent. Monats. vii, 62, D. and S. (nec Fall.). *S. hirsutula*, Flor. *S. littoralis*, Fieb. Eur. Hem. (nec Lin.).

Salda conspicua, D. and S., E. M. M., iv, 93, belongs to the section of the genus in which the pronotum is elongate, and narrow in front; e. g., *S. cincta*, H.-Schf. It is very like *S. affinis*, Zett.=*S. luteipes*, H.-Schf. Wanz., vi, 40, t. exciv, fig. 597; Fieb.; but differs in some particulars, especially in the colour of the antennæ, which is yellow on the first two joints of *affinis*, but in *conspicua*, except on the inside of the first joint, it is black.

SALDA GEMINATA.

Salda geminata, Costa, Fieb., Stål. *S. elegantula*, D. and S. (excl. syn.).

SALDA ELEGANTULA.

Salda elegantula, Fall., Fieb., Zett., Stål. *S. Flori*, Dohrn, D. and S.

For the greater part of the above emendations we are indebted to the investigation of the Fabrician type-specimens by Dr. Stål, as indicated in his "Hemiptera Fabriciana" (1868), and to the same author's "Synopsis Saldarum Sueciæ," in "Ofversigt af K. Vet. Akad. Förhandlingar" (1868).

Insects in Birds' Nests, &c.—The interesting communication of Mr. E. A. Waterhouse (p. 15) reminds me that Herr Cornelius published in the "Stettiner Entomologische Zeitung," 1869, p. 4081, an account of his researches in birds' nests; and, as the author says, as the subject has received but little notice, it may be useful to draw the attention of our collectors thereto, and to this end I give a *résumé* of Herr Cornelius' discoveries.

In Germany it is common to put up, on trees and houses, boxes in which starlings (*Sturnus vulgaris*) make their nests. In one such box, after three years' use, at first by starlings, and then for two years by swifts (*Cypselus apus*), were found 55 pupæ of *Oxypterus pallidum*, Leach, from which the flies emerged in the April following, but a few produced a parasitic *Pteromalus*; also some living *Cryptophagi* and *Lathridii*: other boxes gave a like result. An examination of the excrement of the old swifts showed that these birds feed only, in part at least, on flies and soft insects, and for the rest on hard *Coleoptera*. Undigested fragments—elytra, heads, and legs,—of *Psylliodes chrysocephalus*, Linn., abounded to such an extent that the excrement was rendered shining-green; often an entire beetle of this species, or of *Ps. nigricollis*, Marsh. (which the author rightly esteems only as a var. of it), was found therein. In the excrement of the young birds were seen many remains of other beetles, namely, *Tachyporus*, numerous *Curculionidæ*, especially *Phytonomus*, and ("if I do not err") *Polydrusus*, also *Apion* and *Ceuthorhynchus*. Of the *Rhynchota* several species of *Aphrophora* were numerously represented.

"One does not comprehend how the swifts obtain these insects, which mostly "live on the leaves of low plants, considering that the birds are scarcely ever seen "elsewhere than high in the air." In the nests of the swifts were found many examples of *Anthrenus pimpinelle*, in the larva, pupa, and imago states; in one, which was only one summer old, as many as 110 larvæ, and, says the author "I "believe I may venture to assume that this beetle is developed exclusively in con- "nection with *Cypselus apus*."

In the nests of the swallows (*Hirundo rustica*) were found several species of *Ptinus*, *Cryptophagus*, and *Lathridius*, and numerous pupæ of a fly hitherto not much noticed—*Ornithomyia tenella*, Rogenhofer, which were developed in a room from March to May. The perfect insect flies well, by starts. The pupæ are smaller than those of *Oxypterus pallidum*, but larger than those of *Stenopteryx hirundinis*, Linn., also somewhat flatter and more chestnut-brown coloured than the latter, which are almost coal-black and shining. *Lepisma saccharina* was especially abundant in these nests; 40 specimens, large and fine, were taken, in the winter, out of one nest. *Chelifer cancroides* was also abundant, and many larvæ of *Tenebrio molitor* and *Attagenus pellio* were found.

In the nests of the martin (*Hirundo urbana*) were found species of *Ptinus* and *Lathridius*, numerous light-coloured fleas, and a quantity of pupæ of *Stenopteryx hirundinis*, often 100 in a nest, and *Lyctocoris domestica*, larva and pupa. "Here, and also in sparrows' nests, lives an *Acanthia*, which, notwithstanding Herr Fieber's view to the contrary, is certainly distinct from *A. lectularia*." [This is most probably *A. hirundinis*, Jenyns. Fieber says in the Europ. Hemipt. that all the so-called species that he had seen were only *A. lectularia*.—J. W. D.]

In the nests of the sand-martins (*Hirundo riparia*) *Saprinus rugifer*, numerous *Haploglossa pulla*, Gyll., and *H. nidicola*, Fairmaire.

In hens' nests, in April, a vast number of great fleas, with extraordinarily long antennæ; many larvæ of *Tinea pellionella*; several *Attagenus pelli*, some common *Corynetes*, and numerous *Lycocoris domestica*; also many larvæ of *Tenebrio molitor* and two of *T. obscurus*; the latter became pupæ on the 20th April, and perfect insects ten days after.

In pigeons' nests, a *Homalota*, species unknown; *Aleochara villosa*, Mannerh.; and *Saprinus rotundatus*. Of Dipterous larvæ, *Cyrtoneura cæsia*, Meig., and *Homalomyia canicularis*, Meig.

In old birds' nests in trees, viz., of *Fringilla chloris*, a small *Scymnus* and *Coccinella bipunctata*; and of *Turdus merula*, two examples of *Othius melanocephalus* occurred.

(I may add that *Acanthia pipistrelli*, Jenyns, was found in England two or three years ago, in a bat's nest, by Mr. G. R. Crotch. *A. columbaria*, Jenyns, was originally found in pigeons' nests, and *A. hirundinis*, Jenyns, abundantly in martins' nests, in Cambridgeshire: all the species are now great desiderata).

M. Edouard Perris, in the "Annales de la Société Entomologique de France," vol. ix, 1869, p. 468, records his observations on the examination of swallows' nests in the Landes. He notes that the larvæ of *Lucilia dispar* are therein to be found in the spring, and in the autumn and winter pupæ of *Ornithomyia avicularia* and *Stenopteryx hirundinis*, and larvæ of *Attagenus piceus* and *Anthrenus pimpinellæ*. Dipterous pupæ were also found by him in larks' nests.—J. W. DOUGLAS, 15, Belgrave Terrace, Lee, 7th June, 1871.

War and Entomology.—In the report of the meeting of the French Entomological Society, held on the 26th October, 1870, we read: "M. Lucas exhibited an *Astinomus edilis*, ♀, found living in the 'Jardin des Plantes.' He caught the insect flying at the end of October, and attributes its presence in that locality to fir-planks, with which a military ambulance was in course of construction in one of the galleries of the Museum of Natural History."—Eds.

Myrmecomorphus rufescens, Westw.—The capture of this remarkable insect by Mr. Dale, in Dorsetshire, was followed by that of a second specimen, taken by myself, in Swithland Woods, Leicestershire, at the end of June last.—T. A. MARSHALL, St. Albans, July, 1871.

Agrion tenellum at Weybridge.—The "Club" excursion on the 1st will be a memorable one with me, in consequence of my friend Baron De Selys Longchamps having formed one of the party. I had hoped that, on his account, dragon-flies would have put in a respectable appearance. Eleven species (one-fourth of the British list) were observed, but only singly or in few individuals. The best was *Agrion tenellum*, an exceedingly local species, and one of the instances of South European forms extending northwards to the southern portion of this island.—B. McLACHLAN, Lewisham, 10th July, 1871.

Sialis fuliginosa at Braemar.—Both species of *Sialis* (*fuliginosa* and *lutaria*) occur here.—F. BUCHANAN WHITE, Castleton of Braemar, 2nd July, 1871.

A note affecting the question of Hybridism.—At the end of May last I captured at Deal a male of *Ceuthorhynchideus troglodytes*, in copula with a female of *Cæliodes didymus*,—and effectually so, as the specimens have not become disunited in death. If the female had happened to be a *Ceuthorhynchus* some light might have been thereby thrown on the question raised concerning *Ceuthorhynchus marginatus* and *C. distinctus* (Bris.), by Mr. Rye in this Magazine.—E. A. WATERHOUSE, Ripon.

Notes upon the Lepidoptera of the South-west of Scotland.—To thoroughly change the scene of my explorations, instead of going north I went south in 1870, and took up my residence on the shores of the Solway Firth, in Cobend, Kirkcudbrightshire. This locality was just the opposite of my expectations, for instead of being a rich, wooded country, it is almost destitute of trees, and rocky in the extreme. Instead of hedges the fields are divided by walls of loose stones, and in every direction large masses of granite, which forms the chief geological formation of the district, crop out; while along the sea coast, instead of the undulating sand hills, rich in *Agrotes* and *Leucanie*, which I had pictured to myself, are great precipices, on whose ledges samphire and other maritime plants abound. However, it did not prove an unproductive entomological locality; and when the whole of the country, which is not all of the same nature, comes to be explored, I have no doubt that Kirkcudbrightshire will be found to be as rich a district as any in Scotland. And I am glad to say that there is every chance of its being explored, as it possesses a resident entomologist in the person of my friend Mr. Douglas Robinson, of Almorness, with whom I had many days' pleasant collecting.

The butterflies seen by me here are 21 in number, and do not require especial notice, except in the case of *Canonympha Tiphon*, Rott. (*Davus*, F.), which occurred on Cloak moss. On going on to the moss I noticed *Rhynchospora alba*, the food-plant of the English form of *Tiphon*, and thought that it would be extremely interesting to find that butterfly here. Soon afterwards *Tiphon* turned up, and proved to be the English form *Philoxenus*, Esp. (*Rothliebi*, Stgr.). I have not noticed the *Rhynchospora* in localities where the Scotch form *Laidion*, Bkh., abounds, and it is very likely that its food-plant is different, though the *Rhynchospora* is not an uncommon plant throughout Britain.

Among the *Nocturni* the following are worth mentioning: *Sesia philanthiformis* all along the coast, but, though the larvæ and pupæ were not rare, I did not see a single imago at liberty, and only succeeded in breeding a few. This species appears to live for two years in the larva state, as half-grown larvæ were common at the time that the imagos were emerging, and could be found at any time up till the end of September, when I left. *Chorocampa galii*: a very young larva of this species (which at the time I thought was a larva of *stellatarum*) found its way very mysteriously into my umbrella when I was beating broom for caterpillars of *Chesias*. Its end was as mysterious, for, having been taken to Oxford by Mr. Douglas Robinson, it one day took its departure, probably by the window, and was never seen again!

Hepialus velleda was excessively abundant, and several specimens of the aberration *gallicus* occurred. *Liparis auriflua*: a single ♂ was found; this species was not before in the Scottish list.

Among the *Geometræ*, *Ourapteryx sambucata* was conspicuous, but not abun-

dant; *Venilia maculata* was represented by the type and by a very pale aberration; *Selenia lunaria*, ♀, which laid a batch of eggs to prove that it was only single-brooded in that district; and *S. illunaria* came to light in August to show that it was double-brooded; *Panagra petrararia* asserted its claims to be put upon the Scottish list; the larva of *Abraxas grossulariata* was found feeding—not for the first time—upon one of the *Crassulaceæ*, *Sedum Telephium*; *Emmelesia affinitata* and *alchemillata*, both occurred, as well as a few specimens of *unifasciata*, hitherto doubtfully Scottish. Of the genus *Eupithecia* the following were found: *venosata*, larvæ in capsules of *Silene*, not before, I think, recorded from Scotland; *pulchellata* (a species which seems always to accompany *Digitalis*), *centaureata*, *succenturiata*, *subfulvata*, *castigata*, *nanata*, *subnotata*, *vulgata*, *absynthiata*, *assimilata*, and *pumilata*. One specimen of a *Thera*, possibly a variety of *variata*, was found far from any fir trees; *Melanippe hastata* occurred on Cloak moss, and *goliata* near the sea. The genus *Coremia* was represented by *propugnata*, *ferrugata*, and *unidentaria*.

The larvæ of *Eubolia cervinaria* devastated *Malva sylvestris*, and *Chesias obliquaria* and *spartiata* were common on broom; the larvæ of the former, however, were often ichneumonized.

Platypteryx lacertinaria was beaten out of a tree at Kirkennan, and *Cilix spinula* occurred rarely near the sea. Of the *Pseudo-Bombyces*, *furcula*, *vinula*, *reclusa*, *camelina*, and *dromedarius* were found, as well as a mouldy pupa of *trepida*, the latter near Orchardton.

Sugaring produced a good many species, and a prodigious number of specimens of *Noctuæ*. On one sugared tree I counted at one time no less than 200 specimens, half of them being, probably, *Ajrotis exclamationis*, the remainder being divided among 26 species.

Of the genus *Acronycta* the best were: *ligustri*, several varieties of *rumicis* (one of them larger than the type and nearly altogether black), and the larvæ of *menyanthidis* upon its (according to my experience) favourite food-plant, *Myrica*. Of the species worth noticing were, *Mamestra furva*, *Apamea unanimis*, *Agrotis exclamationis*, several aberrations having the stigmata coalesced and malformed; *A. porphyrea* and *Noctua neglecta* in a locality where there was very little heather; *Noctua conflua*, one decided specimen, *Dahlia* and *xanthographa* with dark hind-wings; *Xanthia cerago*, var. *flavescens*, and *Dianthæcia carpophaga*, *cucubali*, and *conspersa*. I worked hard to try and find some of the Manx *Dianthæcia*, but, though to no effect, I yet think that they may occur there. *Conspersa* lays its eggs inside the calyx, and sometimes on the stamens, of *Silene maritima* and *inflata*. *Hadena suasa*, an unrecorded Scottish species, came to sugar rarely, but *contigua* was not uncommon. I also found a few larvæ of *contigua*, the imago of one of which is nearly unicolorously greyish-ochreous. On Cloak moss Mr. Douglas Robinson caught in my presence *Hydrelia unca*, a species regarding whose occurrence on this side the Tweed there were some doubts. *Stilbia anomala* rewarded a careful search of ragwort flowers at night, and also, with 11 other *Noctuæ*, came to light.

Of the *Deltoides*, *Herminia tarsipennalis*, and of the *Pyrallides*, *Botys terrealis* and *Scopula ferrugalis*, may be noticed as additions to the Scottish list; *B. terrealis* may have been common, but I passed it over at the time as *fuscalis*, which also oc-

curred. The following *Scopariæ* were taken : *ambigualis*, *cembræ*, *pyralella*, *mercurella*, and *cratægella*. Eight *Crambi* were seen, the best being *inquinatellus* and *Warringtonellus*, and at light two specimens (♂ and ♀) of *Chilo mucronellus* astonished me one night ; where they came from I cannot imagine, as the window faced the sea, and there were no reeds within sight. It is perhaps worth noticing that about this time (July 23), for two or three nights, insects came in swarms to a lamp placed at an open window. Among the visitors were two species of *Bombyces*, eleven *Noctuæ*, nineteen *Geometræ* (including *Chesias obliquaria* and *Emmelesia unifasciata*), thirteen *Pyrilides* and *Crambites* (several of which were such day-flying species as *Herbuli cespitalis*, *Pyrausta purpuralis*, and *Phycis subornatella*), and many *Tortrices* and *Tineina*. In the flower seeds of several species of *Compositæ*, the larvæ of *Homæosoma saricola* were common. These larvæ, when full-fed, spin a cocoon, but do not become pupæ till some time in spring, consequently there seems to be a considerable difficulty in bringing them to the perfect state, unless they are left damp. Most of mine, having been left dry here, died, but I have reared one specimen by placing the cocoon among the damp moss in a forcing apparatus (*à la* Dr. Knaggs, *vide* "The Lepidopterist's Guide"). One larva at least, after being placed among the moss, came out of its cocoon and made a fresh one. A few specimens of *Phycis subornatella* and *Rhodophea advenella* occurred ; the latter and *Pempelia palumbella* have not, I think, been previously recorded as found in Scotland.

I found a good many *Tortrices*, but none of any great rarity. Among the best were *Sericoris littoralis*, bred from larvæ found on *Armeria*, *Sciaphila Penziana* and *octomaculana*, *Eupœcilia maculosana*, and the dubious heath-frequenting *ciliella*.—F. BUCHANAN WHITE, Braemar, July, 1871.

Capture of a Zygaena new to the British lists.—To-day I had the pleasure, shared by Mr. J. W. H. Traill, of taking several examples of *Zygaena exulans*, Hchw., a species hitherto unrecorded as British. They were found at an altitude of from 2400 to 2600 feet, on a hill in Braemar. *Z. exulans* does not greatly resemble any of the other British species of the genus. The antennæ are clavate, and obtuse at the apex ; the wings, which are sparingly scaled, are of a dull, dark green, with five dull carmine spots, of which the first is long and narrow and overlaps the basal half of the third ; the second and third spots are small ; and the fourth and fifth large. The hind-wings are dull red, with a dull green border, which is broader and darker in the male. The fringes are ochreous, and the abdomen black and shaggy. In the typical *exulans*, which occurs on the higher Alps and Pyrenees, the nervures are sprinkled with ochreous, but in the var. *canadis*, Dalm., which is the Scandinavian form, the wings are more sparingly scaled, and the ochreous is absent. Our specimens appear to be intermediate between these two forms, as, though the male has no ochreous, the female has the nervures and collar distinctly marked with this colour. *Z. exulans* is about the size of *Minos*.—ID., July 17th, 1871.

Description of the larva of Tapinostola elymi.—My best thanks are due to Mr. James Batty, of Sheffield, who took a long journey during inclement weather, that he might search for the larva of this species, comparatively new to our lists ; and

it may be supposed how much I rejoiced at the success of his expedition, when, on the 16th of May last, I had the pleasure of receiving from him a consignment of growing plants of *Elymus arenarius*, containing several full-sized larvæ.

Of course I am not able to give any account of their earlier proceedings, but at the date above mentioned, they are found feeding in that portion of the plants just above the root, where the blades of the grass spring upwards together, overlapping each other for about six inches or so, before they begin to diverge or fall apart, and assume the glaucous hue above the surface of the sand in which they grow. Nor when the larvæ are full-fed do they change their abode, but spin around them a very slight, though tolerably firm cocoon, with gnawings of their food and particles of frass, between two blades. The lower end of the cocoon, which is rather pointed, is sometimes mixed with grains of sand; the whole structure in shape being fusiform, and about one inch and a-quarter in length. Several moths emerged on the 4th of July, at 10 p.m., and made a short flight in my room as soon as their wings were dry,—one on the 8th emerged at midnight and was ready for flight in a quarter of an hour.

The full grown larva is from 1 to 1½ inch in length, not very stout, cylindrical, and uniform in size except at the second segment, which tapers a little anteriorly, the head being still smaller and sometimes retracted into it; the anal segment also tapers off to a rounded tip, in size about equal to the head. Its skin is plump and smooth, the segmental divisions very moderately incised, and the sub-divisions delicately defined, the sides dimpled, the head and plate behind it, the anterior legs, the anal plate, and the spots, are all very shining, the rest of the body without much polish; it is of a pale, flesh colour, the pulsating dorsal vessel being of a little deeper flesh tint; on each side of this dorsal stripe are just to be discerned, though very faintly, four transverse bars of a rather deeper tint of the ground-colour on each segment, the broadest being in front; the spiracles are black, and along their region the colouring becomes paler, more of a whitish-yellow, as though the interior of opaque whiteness showed through the flesh-coloured skin; the head is reddish-brown, blackish-brown about the mouth; the plate on the second segment is pale yellowish-brown, two pairs of pale, oblong, yellow-brown spots are on the front division of the thirteenth segment, and the anal flap is covered with a plate of the same colour, having a fringe behind of fine, brown bristles; the tubercular dots of the back, and their excessively short bristles, are so very small as to be invisible without a powerful lens; the anterior legs are pale brown, the pro-legs tipped with dark brown.

The pupa varies from five-eighths to three-quarters of an inch in length; is rather slender in form, smooth, and shining, and of a light brown colour.—WM. BUCKLER, Emsworth, July 11th, 1871.

Larva of Eupithecia irriquata at Exeter.—On June 21st I beat from an oak, situated on the border of a beech wood, a small looper, which, by the help of the description by C. Dietze, translated in E. M. M., vol. vii, p. 14, I made almost sure belonged to this species, and have since had all doubts removed by the sight of two figures, taken by my friend Mr. Buckler, of larvæ from which the moths have been reared; this is one of the handsomest of our small geometric larvæ, and it seems strange that we have not taken it more frequently.—J. HELLINS, Exeter, July 7th, 1871.

Tapinostola elymi and *Miana arcuosa* bred.—I am happy to say that I am now breeding *T. elymi* from larvæ I took early in May at Cleethorpes, feeding in the stems and roots of *Elymus arenarius*. *Miana arcuosa* is making its appearance rather freely in my breeding-cage.—JAMES BATTY, 81, Wintworth Street, Sheffield, June 21st, 1871.

Note on the economy of Cossus ligniperda.—Near the bowling-green here, is a birch tree much infested with *Cossus* larvæ. Up to the present time I have always believed the full-grown larvæ spun up among the frass and debris under the bark and inside the tree.

About a fortnight since this view was considerably shaken, on finding at some short distance from the tree two empty pupa cases, close to circular holes in the earth, corresponding in size to the pupæ. At once I suspected the larva had spun up underground, and yesterday I had the best proof that this view was correct, by finding a large ♀ moth, just emerged from the green turf of the bowling-green, the pupa case lying close beside her, and within an inch or so a circular hole from which I extracted the stout cocoon with my finger. This was at least 20 yards from the birch tree.—GEO. NORMAN, Cluny Hill, Forres, N.B., 1st July, 1871.

Crambus myellus at Braemar.—To-day I found on the window a very fine example of this species.—F. BUCHANAN WHITE, Castleton of Braemar, 2nd July, 1871.

Sound produced by Halias quercana.—A specimen of *H. quercana*, after an uneasy existence in its boat-shaped cocoon, emerged last week. The rustling noise the pupa makes in its cocoon I did not investigate, and will not attempt to account for. After the insect emerged I made a careful study of its actions and external configuration (keeping it alive for four days), and arrived at the following results:—The imago makes a “membranous” sound: first, when it expands its wings; secondly, when it flirts its partially expanded wing; and thirdly, on a still, sultry afternoon, a continuous rustling sound is produced during flight. The spot whence proceeds the first noise I am certain about, and have no reason to doubt that the others are produced in a like manner. Furthermore, I conclude the same structure and sound exist in *H. prasinana*.

On looking at the thorax, from above, the most conspicuous objects are the patagia. To prove that these had no connection with the sound I detached one, and expanded the wings on that side. When thus expanding the wing I heard a “click,” which was repeated again and again as the wings were moved. I found that the inner margin of the fore-wing caught a little horny lateral thoracic plate when in the act of expanding, and left it with a jerk, which most obviously produced the click.—A. H. SWINTON, 7, Portsdown Road, Maida Hill, July, 1871.

*** It will be remembered that last year (see E. M. M., vol. vii, p. 231) Mr. Swinton asserted his belief that *H. prasinana* produced an audible noise. This year he has followed up the enquiry, and very kindly sent us living specimens of *H. prasinana* (as did also Mr. Hellins), which he believed to have heard produce a sound. We were not fortunate enough to detect it ourselves. There is much that is singular in the formation of the parts of the body intermediate between the thorax and abdomen in the genus *Halias*, and we are willing to accept Mr. Swinton's testimony that they are connected with sound-producing powers. In answer to our query as

to whether the frenum, or spur, of the hind-wing might not be connected with the sound, Mr. Swinton informs us that, according to experiments he made, the spur has nothing to do with it. He has sent us excellent drawings of the structure of the body of *H. quercana*, which we are sorry we cannot reproduce.—Ebs.

Eidophasia Messingiella bred.—At last I have succeeded in detecting the larva of this pretty species. I had fancied it must feed on *Equisetum*, as that plant always grew where I took it most freely. The first week in May, whilst hunting amongst the *Equisetum*, I observed two leaves of *Cardamine amara* (large bitter-cress) pulled together by a silken thread; at once I thought of the long sought *Messingiella*, and sure enough, there was a small green larva, not at all unlike that of a *Plutella*. I revisited the locality twice, and collected about a dozen of these larvæ, which fed well, and formed open net-work cocoons similar to those of the genus *Plutella*. Two specimens of the imago appeared on the 18th June.

The larva is green, rather larger than that of *Plutella cruciferarum*; the pupa is of a yellowish-green.—J. B. HODGKINSON, 15, Spring Bank, Preston, June 24th, 1871.

Rhodophæa marmorella bred.—Early in May I found several larvæ feeding on the lichen that grows on some stunted sloe-bushes on Whitbarrow, in Westmoreland. I could not find the leaves at all eaten; the larva makes a gallery at the end of the sloe-twigs, I fancy mainly to change in, as I found the pupa as well. The larva seems sometimes to save itself the trouble of spinning silk by using up the wool that was sticking to the bushes, where the sheep had passed through.

The larva is a flat, brown one, with a black head. Mr. Buckler will no doubt describe it better than I can. About a dozen specimens of the perfect insect were out when I returned home on the 19th June.—Id.

Note on Entomological Nomenclature—Mr. Kirby, in the last number of the Ent. M. Mag., states that Linnaeus gave names in 1746 which he, “with scarcely an exception,” altered in 1758. If any one will examine the first ed. of the “Fauna Suecica” he will find that no specific names are used in that work, the familiar twelve-worded diagnosis being alone appended to each insect. Moreover, in the preface to his tenth ed. of the “Systema” (1758), he says expressly that he uses trivial names for the first time; and I can only suppose that Mr. Kirby refers to the fact that, after the synonyms, the common name is added; thus No. 772 is distinguished “*vulgo*, Morio:” the essence of a specific name, however, is that it is not the common name.—G. R. CROUCH, University Library, Cambridge, 3rd July, 1871.

ENTOMOLOGICAL SOCIETY OF LONDON, 3rd July 1871.—A. R. WALLACE, Esq., F.Z.S., President, in the Chair.

Professor Westwood exhibited the minute-book of proceedings of an Entomological Society existing in London in 1780. The members appeared to have consisted of Messrs. Drury, Honey, Swift, Francillon, Jones, and Bentley. The meetings were held weekly, but, in consequence of some internal disagreement, the society seemed to have collapsed in about a year.

Mr. S. Stevens exhibited a collection of *Coleoptera*, recently made by him in Ireland. The most interesting species was *Chlænus holosericeus*, of which he had captured several specimens at Killaloe, near Lough Derg.

Mr. Champion exhibited *Emus hirtus*, captured by him in cow-dung in the New Forest, being the only instance of its occurrence since the late Mr. Haward found an example many years ago. He also exhibited *Dryinus latus* and *Corizus Abutilon*, new to Britain, recently described in this Magazine by Messrs. Douglas and Scott.

Mr. Blackmore exhibited a collection of all orders of insects from Tangiers. Locusts, *Acrydium peregrinum*, were extremely abundant and destructive there, and often lay ankle-deep along the sea shore. They were destroyed by wisps of straw, and he had not observed that trenches were dug to stop their ravages. Mr. Mo Lachlan having remarked that the Chinese held, or did hold, an opinion that locusts were developed from the eggs of craw-fish, Mr. Blackmore said that the Spanish word "langosta" signified both locust and lobster.

Mr. Dunning read a communication from the Rev. Mr. Wayne, of Much Wenlock, complaining of the damage occasioned to his strawberries by a small myriopod, which entered into the interior of the ripe fruit. Mr. Wayne also said that his young carrots were destroyed by a Dipterous larva, probably that of *Psila roseæ*, which bored down the centre of the root. Mr. Druce had observed similar ravages at Kingston.

Mr. Druce exhibited a collection of rare Diurnal *Lepidoptera*, including species of *Papilio*, *Euryades*, *Heliconia*, *Eresia*, *Catagramma*, *Agrias*, *Paphia*, &c.

Mr. Stainton exhibited, for the Rev. R. P. Murray, an example of *Botys fuscalis*, captured by the latter gentleman in the Isle of Man. To the head of this still adhered a portion of the puparium, the antennæ and haustellum being disengaged; the case of the latter projected at right angles from the under-surface of the head, simulating the rostrum of a *Panorpa*. Notwithstanding that the insect must have been nearly blind, it was flying briskly at the time of capture.

Mr. Albert Müller exhibited a vine-leaf, from Basle, covered with the fur-like spots, known as *Erineum vitis*, caused by *Phytoptus vitis*, an Acarus.

Mr. Riley, State Entomologist of Missouri, exhibited a collection of North American insects and their transformations. Among them were Coleopterous larvæ, which Dr. Le Conte, who was present, referred to *Pyrochroa flabellata*.

Prof. Westwood read a paper on new species of exotic *Papilionidæ*. Having used the term "sub-species," he explained this by saying that a sub-species he considered to be a modified form of a species as originally created. Mr. Jenner Weir objected to the use of the word "created" in scientific communications.

Mr. S. S. Saunders read a monograph of the *Strepsiptera*. The genera and sub-genera described amounted to 8, and the species to 21, comprising *Halictophagus* 1, *Stylops* 5, *Hylecthrus* 3, *Elenchus* 3, *Myrmecolax* 1, *Xenos* 1, *Pseudoxenos* 3, and *Paraxenos* 3. Sixteen of these were European (seven British) and five exotic. He considered the group as undoubtedly Coleopterous and allied to *Rhipiphorus*.

Mr. H. W. Bates read descriptions of three new species of *Cicindelidæ*.

Mr. C. O. Waterhouse read a paper on some black species of *Cantharis*, with red heads and filiform antennæ.

Baron De Selys Longchamps communicated "Aperçu statistique sur les Névroptères Odonates," in which he estimated the number of known species of dragon-flies at 1344.

The first meeting after the recess will be held on the 6th November.

ADDITION OF SIX SPECIES (INCLUDING TWO NEW TO SCIENCE) AND TWO GENERA TO THE BRITISH LIST OF COLEOPTERA.

BY D. SHARP, M.B.

The following list of *Coleoptera* new to the British list were captured at Braemar in June last by Dr. Buchanan White and myself.

Olophrum consimile, Gyll. Distinguished from our other species by the prothorax being sinuate at the sides behind the middle. A single specimen in moss (Dr. White).

EUDECTUS WHITEI, nov. spec. *Niger, subnitidus, crebre fortiter punctatus, subtilissime pubescens, thorace breviusculo, lateribus fortiter angulato dilatato, geniculis tarsisque piceis.* Long. $1\frac{1}{8}$ lin.

An E. Giraudi var.?

This insect agrees very well with Kraatz's and Thomson's descriptions of *E. Giraudi*, except as to colour; *E. Giraudi* being described as "*rufo brunneus*," whilst this is intensely black, the knees and tarsi only being slightly paler. I found a single specimen under a stone on the summit of Ben-a-Bhuird. Of our British species, it most resembles *Coryphium angusticolle*, from which it is at once distinguished by the strongly angulated sides of the thorax. *E. Giraudi* itself appears to be extremely rare: Kraatz says four specimens have been taken in different parts of Germany, and Thomson only mentions it as having been found by Professor Boheman.

PTILIMUM CALEDONICUM, nov. spec. *Oblongum, haud nitidum, sat dense fortiterque punctatum, evidenter pubescens, fusco-testaceum, antennis pedibusque testaceis, prothorace transverso, basin versus fortiter angustato.* Long. $\frac{3}{8}$ lin.

Slightly larger than *Pteryx suturalis*; variable in colour, generally dirty testaceous, with the head and thorax darker than the elytra; the thorax is rather narrower than the elytra, it is much broader than long, with the sides rounded in front, and much narrowed behind, without channel, but sometimes with an obsolete impression on each side near the base; the antennæ and legs are yellow; in sculpture and pubescence very similar to *P. Spencei*.

This species was found by Dr. White and myself in numbers under the bark of a dead Scotch fir at Braemar. I should have preferred Mr. Matthews undertaking its description, and have only done so myself at his request: I add, by his permission, the following valuable extract from a letter written by him to me:—

"The *Ptilium* lately received from you belongs to an undescribed and very interesting species. It connects the abnormal *P. croaticum*, Hampe, with *P. Spencei* and its allies; its sculpture and superficial appearance at once denote its affinity to the latter, while its thorax closely resembles that of *P. croaticum* in its enlarged and constricted form. It is just possible that it may have been already described by Col. Motschoulsky; but his short descriptions render identification a matter of so much uncertainty, that I think the best course will be to name and describe this fine species without delay."

Atomaria badia, Er. I beat a single specimen from Scotch fir; it is most allied to *A. elongatula*, but its thorax is depressed just before the base, and the elytra are more strongly punctured. It does not at all agree with Sturm's figure of *A. badia*, but fits Erichson's description accurately.

Zilora ferruginea, Payk. This fine insect occurred under bark of Scotch fir very sparingly; it comes near to *Diræa*, but cannot be confounded with any British insect.

Hylurgus minor, Hart. Very close to *H. piniperda*, but smaller, always with brown elytra, and the second interstice at the apex thickly studded with tubercles like the others: the posterior tibiæ are also rather differently formed.

Besides the above, our best captures were *Elaphrus lapponicus*, *Amara alpina* and *A. Quenseli*, *Aleochara villosa*, *Bryoporus rugipennis*, *Xantholinus lentus*, *Epuræa silacea*, *Dendrophagus crenatus*, *Cis punctulatus*, *Salpingus ater*, *Pyrochroa pectinicornis*, and *Brachonyx indigena*; but, as Dr. White means to publish a complete list in the "Scottish Naturalist," I must refer for fuller particulars to that periodical.

Eccles, Thornhill, Dumfries: 12th August, 1871.

DESCRIPTION OF A NEW SPECIES OF *MELIGETHES* FROM BRITAIN.

BY E. C. RYE.

I have for some time had in my collection an example of a most remarkable species of *Meligethes*, given to me by my friend Mr. T. Wilkinson, who took it near Scarborough, and which, though I could by no means refer it to any published description, I hesitated to treat as new from a single specimen. Now, however, that more have been taken by Mr. Wilkinson, and by Mr. R. Lawson with him (chiefly on

Helianthemum vulgare, growing on a limestone hill, under some old Scotch fir trees, but also sparingly from *Thymus serpyllum*, *Brachypodium sylvaticum*, *Chenopodium vulgare*, and *Origanum vulgare*), I have no possible room for doubt as to its specific value, and accordingly describe it as follows:—

MELIGETHES PICTUS, *sp. n.* [Sectio E, Erichson ; *unguiculis ad basin denticulatis*]. *Breviter ovatus, convexus, nitidus, confertim sat fortiter punctatus, niger, fulvescenti-pubescent, elytris singulatim rufo-maculatis, antennis pedibusque rufo-testaceis, femoribus, tibiis intermediis posticisque externe, nec non tarsorum gracilium apicibus, piceis ; tibiis anticis acute serratis, dentibus apicem versus gradatim majoribus.*

Long. 1—1 $\frac{1}{4}$ lin. (*Anglic.*).

The red spot on the disc of each elytron at once suggests *M. discoideus*, Er., the only other recorded European species exhibiting a similar and permanent coloration (though *M. rufipes*, *lunbaris*, and *æneus* occasionally have lurid elytra) ; but *M. pictus* may at once be known from *discoideus* by the sectional character of its denticulate claws, its shorter and more convex form, less close punctuation, more strongly and closely denticulated anterior tibiæ, &c. In size and punctuation it recalls medium individuals of *M. brunnicornis*, Sturm ; but its legs are somewhat longer and less robust (the tarsi especially being longer and more slender) than in any of our recorded species, giving the insect almost the facies in that respect of a *Brachypterus*. Its average smaller size, rather narrower form, much stronger punctuation, and color differences, and the more even and gradually increased serration of its anterior tibiæ, of which the teeth are sharper and not so stout, readily separate it from *M. solidus*, Ill., the only other recorded British species of its section.

The antennæ are testaceous, with the basal joint and the apex of the club more or less pitchy, the second joint being the lightest in color.

The vertex is shining, flat, evidently emarginate in front, and very closely and somewhat indistinctly punctured ; the mandibles are pitchy-brown.

The thorax is very convex, slightly (if at all) wider behind than the base of the elytra, quite one-third broader than long, distinctly rotundate and very delicately margined on the sides, which are not so gradually contracted from the base towards the front as in *solidus* (so that the greatest width does not seem to be near the base, as in that species), but are nevertheless considerably rounded off in front towards the anterior angles, which are much depressed : the apical margin is widely emarginate, the excavation being rather more decided than in *solidus* : the hinder margin has a wide but slight and very gently rounded projection over the scutellar region, and is more rounded off to the

lateral margins than in *solidus*, with scarcely an indication of the posterior angles: the punctuation of the surface is much as in *brunnicornis*, perhaps a little closer than in that species, and very close in the front and at the sides.

The elytra are nearly half as long again as the thorax, with the sides more parallel and the apical margin more truncate than in *solidus*; their punctuation is much as in *brunnicornis*, only rather more closely packed, so as to be slightly confluent in places, and each of them is marked with a more or less sharply defined red stain on the disc, varying in size from an oblong streak to a broad blotch occupying more than half of each elytron, but never reaching either base, side margin, suture, or apex.

The legs are not so stout as, but longer than, in *solidus*, the tarsi especially being longer and not so dilated, and the apical joint unusually slender and elongate, almost equaling the rest in length, with the claw itself very minute. The anterior pair are bright rufo-testaceous, with slightly dusky femora, and their tibiae are narrower than in *solidus*, and much less strongly but more sharply serrate, the individual denticulations gradually increasing from the base towards the apex, where they are stronger than the corresponding teeth in *brunnicornis*: the fourth denticulation from the bottom is, perhaps, slightly the most developed. The intermediate and posterior pairs are wider and darker than the anterior, having their femora and the outer margins of their tibiae pitchy, the latter being also set with short dark setæ. All the tarsi are more or less pitchy, being especially dark at the apex.

Beneath, the insect is black, with pitchy testaceous trochanters.

10, Lower Park Fields, Putney, S.W.
9th August, 1871.

NOTES ON SOME CHILIAN *CICINDELE*, WITH DESCRIPTION OF A NEW SPECIES.

BY EDWYN C. REED.

Upon taking charge of the Entomological Department of the National Museum of Chile, in 1869, I found the genus *Cicindela* represented by one species only, the *C. chilensis* of Aud. and Brullé. This species is not uncommon in the environs of Santiago, running about on the sandy banks of the river Mapocho.

During the summer of 1869—70, a Chilean entomologist, Señor Herreros, took a few specimens of *C. peruviana*, Lap., at Carrizal Bajo. This species is said by Gay, in his *Historia Fisica de Chile*, Zool., iv, p. 117, to be "very common in Chile, principally in the Cordilleras of Coquimbo, Copiapo, and Santiago;" this, however, with many other statements by the same author, must be taken *cum grano salis*.

In January of the present year, Captain F. Vidal Gormáz, of the Chilean navy, while exploring a river in South Chile, captured another species of *Cicindela*, apparently near *C. patagonica*, Brullé, but of which I can find no description, and accordingly now characterize:—

CICINDELA GORMAZI, *sp. n.*—*Brevis, postice dilatata, obscure piceo-nigra; labri angulis anticis aurantiaco-maculatis; elytris lunulâ humerali, fasciâ medianâ undatâ, lunulâque apicali flavis ornatis, punctis majoribus viridescenti-flavis, ad basin congregatis, prope suturam serie dispositis, punctulisque multis nigris in fasciis flavis oculo armato distinguendis, notatis; pedibus metallescentibus, corpore subtus, fronteque crinibus albis crassis instructis.*

Long. corp. 4—5 *lin.*; *elytr. lat. ad basin* $1\frac{1}{2}$ *lin.*, *post medium*, 2 *lin.*

Habitat: Chile merid.

C. Gormazi much resembles *C. chilensis*, but is a much broader insect, and has much more sharply defined edges to the central band of the elytra, which is fringed in *C. chilensis*.

C. peruviana occurs in Northern Chile in an almost rainless region; *C. chilensis* in Central Chile, on the plains of Santiago, with an average rain-fall of 18 days *per annum*; *C. Gormazi* in a region of nearly constant rain, of at least 250 days *per annum*.

Museo Nacional, Santiago de Chile.

April 30th, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 7).

BY H. W. BATES, F. Z. S.

Genus EUCÆRUS,

Leconte, Trans. Amer. Phil. Soc., x., 1863, p. 386.

The characters of this pretty and curious little genus are well given by Leconte, who mentions its affinity towards the *Lachnophori*, but originally placed it in the same group as *Stenolophus* and *Harpalus*, from which he since removed it. According to him, the mentum is untoothed. The species are free from the punctuation which characterizes nearly all the rest of this sub-family, some of them being quite smooth and glossy. The pubescence of the antennæ begins at the base of the third or even the second joint, and these organs are remarkably long and robust, in most species as long as the body. The palpi have a short downy pubescence. The thorax varies much in shape, but in all its forms shows a distinguishing character in its lobed hind margin, similar to that of the *Lebiæ*. The elytra are broadly truncated and the marginal stria is continued along the apical margin. The eighth stria is generally deepened as it approaches the apex, in a similar way to the genera of the *Tachys* group.

The species have the same habits as the *Bembidiinæ* and the other *Lachnophorinæ*, being found, coursing nimbly, on the moist, muddy margins of pools.

EUCÆRUS SULCATUS, n. sp.—*Minus nitidus, capite nigro, epistomate labroque rufo-testaceis; palpis pedibusque flavo-testaceis; antennarum articulis 1—6 rufescentibus, 8—9 albis (cætera desunt); thorace lato, rufo-testaceo, lateribus explanato-marginatis, postice modice angustato, angulis posticis vix productis, latis, apice obtusis, lobo postico angusto, rotundato; elytris rufo-fuscis, sutura marginibusque pallidis, profunde æqualiter striatis.* Long. 2 lin.

Banks of the Tapajos. One example.

EUCÆRUS STRIATUS, n. sp.—*Minus nitidus; capite piceo, parte antica, palpis pedibusque flavo-testaceis; antennarum articulis 1—6 rufescentibus, 7—11 testaceo-albis; thorace late cordato, lateribus anguste explanatis, postice sinuatim angustato, angulis posticis vix productis, obtusis, lobo postico lato, minus producto; elytris rufo-fuscis, sutura marginibusque pallidis, æqualiter simpliciter striatis.* Long. $1\frac{1}{2}$ lin. 3 exempl.

Banks of the Tapajos, at Santarem. Differs from *E. sulcatus* in its smaller size and the much less sulciform striæ of the elytra. In both the thorax is transverse, with flattened-out lateral margins, the flattened portion broadest at the hind angles.

EUCÆRUS SERICEUS, n. sp.—*Niger, elytris ænescentibus, iridiscenti-sericeis, palpis pedibusque flavo-testaceis; antennarum articulis 1—6 fuscis, 7—11 albis; thorace lato, postice sinuatim angustato, lateribus præcipue prope angulos posticos explanato-marginatis, lobo postico lato; elytris fortiter striatis.* Long. $1\frac{1}{2}$ lin. 1 exempl.

Ega.

EUCÆRUS GEMINATUS, n. sp.—*Nigro-piceus; labro, palpis pedibusque flavo-testaceis, antennarum articulis 1—2 rufo-testaceis, 3—6 fuscis, 7—11 albis; thorace capiti latitudine æquali, nitido, cordato, postice fortiter angustato, angulis posticis abrupte productis, parvis, dentiformibus; angulis anticis deflexis, supra antice convexo, lobo postico lato, vix producto; elytris fortiter striatis, margine angusto, maculis rotundatis utrinque duabus, alteraque elongata postica suturali, fulvis, notatis.*

Long. $1\frac{1}{3}$ lin. 1 exempl.

The twin spots of the elytra are situated side by side on the disc near the base, one occupying interstices 3–5, and the other, 7–8; possibly in other examples they may be united and form a short fascia.

Banks of the Tapajos, at Santarem.

EUCÆRUS HILARIS, n. sp.—*Gracilior, nigro-piceus, politus, labro palpis pedibusque flavo-testaceis, antennarum articulis 1—2 flavo-testaceis, 3—7 fuscis, 8—11 albis; thorace capite angustiori, cordato, postice sinuatim angustato, angulis posticis explanatis, abrupte productis; elytris breviter ovatis, subtilissime striatis, utrinque prope basin macula transversa bilobata, alteraque postica rotundata suturali, fulvis, ornatis.*

Long. $1\frac{1}{6}$ lin. 1 exempl.

The thorax is very similar in shape to that of *E. geminatus*, but much narrower, and the elytra are much shorter and rounder, besides being nearly smooth, the striæ being visible only under a powerful lens.

St. Paulo, Upper Amazons.

EUCÆRUS LEBIOÏDES, n. sp.—*E. hilari simillimus; nigro-piceus, politus, labro, palpis pedibusque flavo-testaceis, antennarum articulis 1—2 flavo-testaceis, 3—7 fuscis, 8—11 albis; thorace capiti latitudine æquali, cordato, postice valde sinuatim angustato, angulis posticis explanatis, productis; elytris breviter ovatis, subtilissime striatis, utrinque prope basin guttis duabus (interiore majore) macula elongata postica suturali, fulvis, notatis.*

Long. $1\frac{1}{2}$ lin. 3 exempl.

Distinguished from *E. hilaris* only by its broader thorax, and the two separate rounded spots of the elytra.

Banks of the Tapajos, at Santarem. In my own collection and that of Mr. Grut.

EUCÆRUS PULCHRIPENNIS, n. sp.—*Gracillimus, specibus Ega generis quibusdam similis; rufo-testaceis nitidus, pedibus pallidioribus; antennarum articulis 1—3 rufo-testaceis, 4—6 fuscis, 7—11 albis; capite suprâ convexo, lævissimo; thorace capite angustiori, anguste cordato, lateribus angustissime marginatis, basi constricto, angulis posticis haud prominulis, suprâ antice valde convexo; elytris lævibus, macula humerali vittaque deinde usque ad marginem posticum curvata, suturam attingenti, fuscis, ornatis.*

Long. $1\frac{1}{3}$ lin. 1 exempl.

Banks of R. Tapajos. Resembles *Ega formicaria*, especially in the shape of the head, which, however, is not constricted behind into a narrow neck, neither have the elytra the transverse depression characteristic of *Ega* and *Chalybe*; the thorax is also rather broader and shorter than in those genera.

Genus CHALYBE.

Castelnau, Etudes Entom., p. 92, 1835 (*Calybe*); Hist. Nat. Ins., i, 156, 1840 (*Chalybe*).

The examination of a series of species leads me to think this genus,

abolished by most authors, ought to be maintained. The species resemble the more slender *Lachnophori*, but are at once distinguished by the transverse depression of the elytra before the middle. The terminal joint of the palpi is more tumid, and the mandibles are much longer and narrower. The thorax is much more convex, and the margin which separates the pronotum from the flanks is very feeble, or partially obliterated. The eyes are remarkably large and salient, and the shape of the head triangular, with the vertex plane.

CHALYBE BASALIS, n. sp.—*Capite et thorace cupreis, grosse creberrime punctato-rugosis, mandibulis, palpis, antennarumque articulis 1—4 (cæteris fuscis) rufo-testaceis; elytris fortiter striatis, striis exterioribus flexuosis, suprâ dimidio basali fulvo, fusco-maculato, dimidio apicali nigro-æneo, fascia brevi maculari ante-apicali flavo-testacea; pedibus flavo-testaceis, rufescenti maculatis.* Long. 2 lin.

Banks of the Tapajos.

CHALYBE LEPRIEURII, Casteln., loc. cit. Cayenne. Evidently closely allied to the above, but with two yellow spots on each elytron.

CHALYBE LEUCOPA, n. sp.—*Elongata, nigro-ænea, nitida, antennarum articulis 4 basalibus, palpis, pedibusque testaceo-albis; capite grossissime scabroso-punctato, mandibulis rufo-piceis; thorace elongato, postice gradatim attenuato, basi marginato, margine laterali oblitterato, supra lævissimo, puncto unico utrinque discoidali, lineaque dorsali antice fortiter impressa; elytris fortiter striatis, interstitiis uni-seriatim, leviter, distanter punctulatis, utrinque maculis duabus (quarum una prope basin, magna, quadrata, altera prope apicem dimidio brevior, transversa) testaceo-albis ornatis.* Long. 2 lin.

Differs from *C. Leprieurii*, Castelnau, by the smooth, glossy thorax. His description commences — “Très-fortement ponctué presque rugueux;” a phrase which can only be understood as applying to the whole body, but which is probably intended to apply to the head and thorax only.

St. Paulo, Upper Amazons, in company with the *Lachnophori*.

CHALYBE INÆQUALIS, Brullé, voy. de d'Orbigny, Ins., p. 44. Closely allied to *C. leucopa*; differing chiefly in the finely-punctured and roughened thorax, and especially in the margins of the pronotum being distinct and entire; a shallow sulcus runs up each side of the disc, from the situation of the usual fovea near the posterior angle. The elytral spots are smaller, and the palpi, base of antennæ, and legs spotted with fuscous.

Ega, Upper Amazons. Taken by d'Orbigny at Corrientes, on the Paraná.

CHALYBE TUMIDULA, n. sp.—*C. inequali major, elytris latioribus, thorace convexiori; saturate cenea, dense pubescens, palpis, antennarum articulis 4 basalibus pedibusque flavo-testaceis, femoribus tibiis apicibus late infuscatis; capite grosse rugoso-punctato; thorace valde convexo, basi marginato, lateribus magis rotundatis, marginibus antice solùm distinctis, suprâ subtiliter punctulato, disco utrinque puncto majori lineaque dorsali antice fortiter impressa; elytris oblongo-ovatis, fortiter striatis, interstitiis sparsim uni-seriatim punctatis, utrinque maculis duabus transversis pallidis, per strias in maculas minores divisas, ad basin obscure rufescentibus.*
 Long. $2\frac{1}{3}$ lin.

Ega.

Kentish Town: August, 1871.

DESCRIPTIONS OF NEW SPECIES OF AFRICAN DIURNAL LEPIDOPTERA.

BY CHRISTOPHER WARD.

(Continued from page 60).

ACRÆA POLYDECTES, n. s.

Upper-side: fore-wing elongated, brown, darkest at the base and outer margin; within the cell, which at the extremity is marked with red, is a black spot, beyond, a cluster of three black spots; from the under-side of the cell to the hinder margin is red, with three black spots. Hind-wing red, base brown, with five black spots on the outer side; hinder margin bordered with dark brown, with seven small red spots, which are placed on the margin.

Under-side: same as the upper-side, but lighter in colour, and the black spots at the base more clearly defined. Expanse $3\frac{1}{4}$ inches.

Habitat: Camaroons.

Allied to *Acræa Pereuna*, Doubleday.

ACRÆA PHARSALUS, n. s.

Upper-side: fore-wing red, apex and outer margin broadly marked with brown, within the cell three dark brown spots, and, beyond, an elongated marking of grey; near the anal angle two larger spots of dark brown. Hind-wing red, base light brown, with numerous dark brown spots, which extend to the centre of wing; outer margin bordered with brown, without spots.

Under-side: pale yellowish-brown; markings as on upper-side, but very clear, and the spots on the lower wing black; outer margin of both wings with numerous radiated markings of darker brown. Expanse $2\frac{3}{4}$ inches.

Habitat: Camaroons.

Also in the collection of Mr. W. C. Hewitson.

JUNONIA KOWARA, n. s.

♂ Fore-wing falcate, hind-wing prolonged at the anal angle.

Upper-side: base brown, both wings crossed vertically with a band of lighter brown, narrow at the fore-margin of upper wing, broadest at the inner margin of lower wing; this band is bordered on the inner side with rosy-purple, and contains eleven small spots, the uppermost white, the others black; outer margin of both wings dark brown.

Under-side: light brown, crossed midway from the anal angle of lower wing to centre of upper wing with a narrow band of darker brown, the base of upper wing with wavy markings of darker brown.

♀ resembles ♂, but a lighter brown. Expanse ♂ $2\frac{1}{4}$ inches; ♀ $2\frac{1}{2}$ inches.

Habitat: Old Calabar, Camaroons.

EURYPHENE COMUS, n. s.

♂ *Upper-side*: brown, fore-wing crossed obliquely with an orange band; near the apex a white spot; the apical half and extremity of cell a darker brown.

Under-side: light brown, both wings banded across with purplish-grey; apex of fore-wing tipped with white. Expanse $2\frac{1}{2}$ inches.

Habitat: Camaroons.

EURYPHENE NIVARIA, n. s.

♂ *Upper-side*: brown, fore-wing with an oblique patch of yellow near the apex; darkest towards the outer margin.

Under-side: light brown, with a broad curved band of grey crossing both wings, lightest at the apex of fore-wing.

♀ resembles ♂, but considerably larger. Expanse ♂ $2\frac{1}{2}$ inches; ♀ $3\frac{1}{4}$ inches.

Habitat: Camaroons.

The upper-side of the male resembles *Euryphene Phantasia*, Hewitson, but the female, and the under-side of both sexes, are quite distinct.

(To be concluded in our next.)

Addition of a genus and species to the list of British Xylophagous Coleoptera.—Among some beetles recently taken near Scarborough by that assiduous and successful Coleopterist, Mr. R. Lawson, and sent to me for determination, is a specimen of *Polygraphus pubescens*, Fab (found under fir-bark). The genus to which it belongs is readily separable from the other *Hylesinides* by each of its eyes being almost entirely divided into two parts, through an encroachment of the lateral piece from which the antenna springs (not of the forehead, as Redtenbacher states); by the third joint of its tarsi not being wider than the preceding; and by the club of its antennæ not being articulated. The club, moreover, is very large, flattened, ovate, and considerably longer than the four-jointed funiculus. The anterior coxæ are very close to each other, and the intermediate pair widely separated.

Of our recorded *Xylophaga*, *P. pubescens* can only (even superficially) be compared with *Hylastes obscurus*, Marsh., which it somewhat resembles in size, build, and colour. But, apart from its salient generic differences, it may be known at once from that species by the absence of striæ from its elytra, which are very delicately and confusedly granulose-punctate, and clothed with a mixture of scanty scale-like pubescence and very short setæ (the latter in certain lights indicating the position of the obsolete striæ). Its anterior tibiæ, moreover, are dilated in a much less degree and less abruptly, and are only slightly denticulate-serrate on the outer edge, the teeth becoming gradually more conspicuous towards the apex.—E. C. RYE, 10, Lower Park Field, Putney, S.W., August, 1871.

Notes on Dr. Sharp's Catalogue of British Coleoptera.—As I have lately published a list of British *Coleoptera*, containing the names of species not before brought to public notice as inhabitants of our islands, I give herewith some brief particulars about them. They are:—

Lathrobium atripalpe, Scriba: taken by me at Edinburgh here, and also, I believe, by Mr. Crotch.

Lithocharis diluta, Er.: a male individual of this species was taken by me on the banks of the Cairn, near Dumfries, some two years since.

Oxytelus Fairmairei, Pand.: I have found this species very sparingly in several localities; it is, no doubt, passed over as *depressus* by collectors.

Thinobius major, Kr.: taken by Mr. Crotch on the shores of Loch Rannoch.

Lesteva muscorum, Duv.: taken by me, sparingly, both in Scotland and England, and, I believe, also by Mr. Rye.

Scydmonus carinatus, Muls.: British examples of this species have been determined for Mr. Crotch by M. de Sauley.

Orthoperus atomarius, Heer: found abundantly by Mr. Crotch at Devizes.

Phalacrus brunnipes, Bris.: I have found what I suppose to be this species at Chatham and Lymington.

Agriotes sordidus, Ill.: a carded specimen, taken long since by Mr. Wollaston at Southend, is in Mr. Crotch's collection. The species should be found, if looked for, on our southern coasts.

Ptinus subpilosus Müll.: I can give no locality for this species; it has been given me by Mr. Crotch, and I purchased it years ago from Mr. Brewer.

Cis elongatulus, Gyll.: Mr. Crotch considers he has Scotch examples of this species.

Eusomus ovulum, Ill.: taken by Mr. Edleston, at Grange.

Sitones brevicollis, Schön.: this is now considered by M. Allard to be a good species. (In Berl. ent. Zeit.). It is not uncommon in the South.

Bagoüs nigritarsis, Th.: "Cambridge," Mr. Crotch.

Orchestes sparsus, Gyll.: in Dr. Power's collection; confirmed by M. Brisout de Barneville.

Ceuthorhynchus rotundatus, Bris.: taken by Mr. Crotch near London, and confirmed by M. Brisout.

Ceuthorhynchideus pulvinatus, Gyll.: in Dr. Power's collection; confirmed by M. Brisout.

Baridius chlorizans, Germ.: taken by Mr. Sidebotham, at Devizes.

Rhyncolus gracilis, Rosenh. ; in Mr. Crotch's collection ; taken by the late Rev. Hamlet Clark at Esher.

Magdalinus Heydeni, Desbr. : mentioned by the author as British in his monograph of the genus ; he says he has specimens from this country in his collection.

Cryphalus granulatus, Ratz. : in Dr. Power's collection ; confirmed by Herr Eichhoff.

Urodon rufipes, Fab. : taken by Mr. Plant, at Leicester.

Cassida chloris, Suffr. : specimens of a *Cassida* taken by Mr. Lennon and myself, in this district, are different from our other species, and are, perhaps, the *chloris* of Suffrian.

I regret that (owing chiefly to insufficient revision of the proofs) many errors have been allowed to pass, of which I will mention the most important :—

Quedius semiobscurus, Marsh., is omitted after No. 945.

Xantholinus glaber, Nordm., is omitted after No. 1031.

Lithocharis tricolor, Marsh. : there should have been no number before this name, as I intended it as a synonym of *propinqua*, Bris.

No. 1318 : for "*nanus*, W.C." read "*nanus*, Reichenb."

Euplectus Dennyi, Wat. : there should have been no number before this, it being a synonym of *nigricans*, Chaud.

The L has been omitted from MALTHINUS.

Dasytes niger, Linn., is, I am informed, undoubtedly a British species, and has been recently taken by Mr. Champion, in the New Forest.

The number has been omitted before *Psylliodes chrysocephala*, Fab., which makes it erroneously appear as a synonym of *hyoscyami*, L.—D. SHARP, Eccles, Thornhill, Dumfries, August, 1871.

Notes on captures of Coleoptera.—*Atemeles paradoxus* : one specimen in April at Folkestone, in a nest of *Myrmica lævinodis*, and greatly simulating that ant in appearance. Another specimen was subsequently found (under similar conditions) by my friend Mr. Marsh, who was with me at the time.

Ceuthorrhynchus urticæ : I have again taken two or three specimens of this species at Mickleham, in May last ; always on nettles, and accompanied by swarms of *Cæliodes didymus*.

Ceuthorrhynchus tarsalis :* I have turned up this species (for the first time, I believe, in any great quantity) near Erith, on *Sisymbrium*, and unaccompanied by *sulcicollis*, in June last ; and it has subsequently been taken in similar quantity by Dr. Power, in the same locality. *Ceuth. constrictus* occurred at the same place on *Erysimum alliaria*.

Bruchus canus : in June last I found about a dozen specimens of this species, on the chalk downs at Caterham, Surrey, by sweeping *Onobrychis sativa*. The above species, included (I believe) in our Catalogues, on the authority of two specimens in Dr. Power's collection, taken at Gravesend, is readily separated from *cisti*, its nearest ally (which occurs on *Cistus*), by its larger size and peculiar brownish pubescence (when fresh). The antennæ of the ♂ are longer and stouter than in the ♀, as in *cisti*.

Tychius lineatulus, *Miarus campanulæ*, *Tomicus dryographus*, ♂, *Smicronyx jun-*

* Should any Coleopterist be in want of this species, I shall be happy to supply him, on receipt of box and return postage.—G. C. C.

germanniæ (by sweeping), *Baridius picicornis* (at roots of *Reseda lutea*, as usual), *Aphodius arenarius* and *Deleaster*, on the wing, have also occurred to me in the same locality.

Whilst staying in the New Forest, at Brockenhurst, during the end of last June, I obtained, in addition to the ordinary New Forest things, a specimen of *Emus hirtus*, which occurred just under the edge of some fresh cow-droppings amongst heath; *Colydium elongatum*, one specimen under the loose bark of a felled beech (unaccompanied by *Platypus*, which I dug out of stumps); *Synchita mediolanensis* (?), several specimens under bark of beech, accompanied by a few *Lamophlæus bimaculatus* and *Lathridius carbonarius*; *Athoüs rhombeus*, one specimen, dug out of a rotten stump; *Melasis buprestoides*, dug out of a felled beech tree; *Leptura scutellata*, about 30 specimens, dug out of a solid beech stump, a number more being smashed in the process; *Strangalia aurulenta*, also dug out of a stump, with several larvæ, which I failed to breed; *Anoplodera sex-guttata*, on umbelliferous flowers; *Grammoptera analis* and *Strangalia nigra*, by sweeping; *Tychius 5-punctatus*, a few specimens on wild tare in plantations; *Tomoxia biguttata*, rather common (but difficult to secure), flying about in the hot sun and settling on stumps and felled logs, also dug out of stumps; *Dasytes niger*, Lin. (omitted accidentally from Dr. Sharp's new catalogue), a few specimens picked up singly at different times, in flowers, &c.; *Phleotrya Stephensii*, two or three, under bark of stumps, and one dug out of solid, hard wood; *Mycetochares bipustulata*, *Diacanthus bipustulatus*, and *Philonthus splendidulus* occurred sparingly under bark. *Tomicus Saxeseni*, *Brachytarsus varius*, &c., occurred by casual sweeping. *Telephorus testaceus* was commonly taken by sweeping in a marshy place, and unaccompanied by *limbatus*.

A hurried visit from Brockenhurst to Bournemouth produced *Polydrosus confluens* in quantity, on furze, there being no broom within sight, as far as I could ascertain. *Smicronyx pygmaeus* and *cicur*, and *Apion scutellare* also occurred in the same locality.

Phleophagus spadix: I found this species somewhat commonly, in July, at Harwich, sticking about the old stumps on the shore (some *in cop.*) at low water, in company with *Ischnomera melanura*, scarcely above (some indeed were below) high water mark. I also found a few specimens by breaking open the stumps; so I have no doubt that it breeds in them, probably just above high water mark.

I may also note that I have secured a second specimen of *Baridius scolopaceus*, from the same locality as before; but all my workings at the plants mentioned in my previous note have, up to the present time, proved abortive.—G. C. CHAMPION, 274, Walworth Road, London, S., August, 1871.

Captures of Coleoptera in Buddon Wood, Leicestershire.—In the last week of May I took, along with many others, the following species:—

Calosoma inquisitor, in plenty, off the stems and trunks of oaks, at dusk; *Rhynchites ophthalmicus*, by beating hawthorn; *Clythra quadripunctata*, off elder trees, in the neighbourhood of ants' nests; *Trachodes hispidus* and *Acalles roboris*, by beating the fallen stems and twigs of oak; *Staphylinus pubescens*, pretty freely, running about a dead rock.

With regard to *Calosoma inquisitor*, where collectors of *Coleoptera* only find one

or two specimens of this insect, if they would examine the trunks of oak trees in the neighbourhood at dusk, they would, from my experience, most probably be rewarded by the capture of a great many more specimens of this interesting insect.

I have noticed a *Calosoma* closely allied to *C. sycophanta*, in great quantities, and under the same conditions, in the woods in Delaware and Maryland, U. S. I think, without doubt, that they ascend the trees at night in search of food, feeding upon the small caterpillars which generally abound upon oak trees in the spring, and that they return in the early morning to hide.

I might say that in Buddon Wood the time of its appearance is about the last week in May or the commencement of June. I have just taken *Auchenia quadrimaculata* in great plenty.—HARRY HOLYOAK, 45, Humberstone Gate, Leicester, July, 1871.

A List of the Odonata (Dragon-flies) occurring in the neighbourhood of Epping.—Having captured a large portion of our British *Libellulæ* in the neighbourhood of Epping, I thought a list of them might be interesting to some of your readers. I regret to say that some of the best localities are destroyed, and I am not certain that all the species enumerated are now to be found here. The nomenclature is that adopted by Mr. McLachlan, in his valuable catalogue of British *Neuroptera*.

1. *Leucorrhinia dubia*, Lind.=*rubicunda*, Curtis: found among the old gravel pits on Coopersale Common, but always rare.

2. *Sympetrum striolatum*, Charp.=*vulgata*, Steph. Curtis (nec Linn.): very common everywhere round Epping.

3. *Sympetrum flaveolum*, Linn.: very common in certain years among the gravel pits on Coopersale Common, in August and September.

4. *Sympetrum sanguineum*, Müll.=*rufostigma*, Newman: very common among the gravel pits on Coopersale Common, in September and October.

5. *Sympetrum scoticum* Don.: common in certain years among the old gravel pits.

6. *Platetrum depressum*, Linn.: very common.

7. *Libellula quadrimaculata*, Linn.: the commonest species of the family.

8. *Libellula fulva*, Müll.—*conspurcata*, Fab.: rare, occasionally found flying over a large pond in Ongar Park Woods.

9. *Cordulia ænea*, Linn.: very common on Coopersale Common and other places round Epping.

10. *Gomphus vulgatissimus*, Linn.: very common at High Beech, and occasionally seen at other places near Epping.

11. *Anax formosus*, Lind.=*imperator*, Leach: very common formerly on Coopersale Common, and at two large ponds by the side of the new road through the forest.

12. *Brachytron pratense*, Müll.=*vernalis*, Lind.: common over ponds by the side of Park Hall Woods and other places, in May and June.

13. *Æschna mixta*, Lat.=*affinis*, Steph. (nec Lind.): rare; found on North Weald Common, bordering on Ongar Park Woods, in June.

14. *Æschna cyanea*, Müll.=*maculatissima*, Lat.: very common.

15. *Æschna grandis*, Linn.: common in the autumn.

16. *Calopteryx virgo*, Linn.: common, flying on small streams.

17. (?) *Calopteryx Vesta*, Charp. : I believe this insect to be distinct from *C. virgo*. The wings of the male are always of a bright reddish-brown, and those of the female are much more transparent, and the nervures of a paler green than those of the female *virgo*. It is common in the rides of Ongar Park Woods, flying about the trees. I never saw a specimen of the typical *virgo* there, and there is no running water within two miles.

18. *Calopteryx splendens*, Harris = *Ludoviciana*, Leach : common over small running streams.

19. *Lestes sponsa*, Hans.=*forcipula*, Charp. : common.

20. *Lestes nymphæ*, Selys : rare ; found on Coopersale Common.

21. *Lestes virens*, Charp. : rare ; among gravel pits.

22. *Platycnemis pennipes*, Pall.=*platypoda*, Lind. : common over small streams.

23. *Erythromma najas*, Hans.=*chloridion*, Charp. : very common on Coopersale Common, among the rushes.

24. *Pyrrosoma minium*, Harris=*sanguineum*, Lind. : very common.

25. *Pyrrosoma tenellum*, Vill.=*rubellum*, Lind. : very common formerly among the rushes on Coopersale Common. It is remarkable that this southern species should occur in England.

26. *Ischnura pumilio*, Charp.=*rubellum*, Curt. (nec Lind.) : rare ; occasionally found among the old gravel pits.

27. *Ischnura elegans*, Lind.=*ezonotum*, Steph. : common everywhere.

28. *Agrion pulchellum*, Lind.=*puella*, Steph. : not uncommon about the ponds by the side of the new road through the forest.

29. *Agrion puella*, Lind. : common, and generally distributed.

30. *Agrion cyathigerum*, Charp. : found near the large ponds on the new road through the forest.

In addition to the above-named species I once saw a *Cordulia*, very distinct from *ænea*, which I believe was *Curtisii* ; it was at rest, and I plainly saw the yellow dorsal markings. I had no net with me and was unable to capture it.—HENRY DOUBLEDAY, Epping, July, 1871.

[The foregoing list comprises two-thirds of the British species. On Stephens' authority *Lestes virens* is stated to come from the New Forest, but Mr. Doubleday tells me he believes the individuals were taken by him at Epping, and that Stephens afterwards confounded the localities. I scarcely agree with Mr. Doubleday in considering his *Calopteryx Vesta* as distinct from *virgo*, though it may be a race in which the wings of the male never acquire the ordinary adult tinting.—R. McL.]

Capture of Callimorpha Hera near Exeter.—An event of so unusual occurrence as a visit of *C. Hera* deserves to be recorded. On the 14th inst., about 9 p.m., when taking my usual evening round to my sugared trees and plants, my attention was suddenly arrested by the sight of something brightly coloured, like a bright purple and yellow-striped petal of a tulip, lying flat on a sugared corymb of *Tanacetum vulgare* ; and bringing my bull's-eye to bear upon it, it suddenly, to my dismay, moved and took wing ; in an instant, however, my net was ready, and the beautiful creature became my prisoner.—H. D'ORVILLE, Alphington, 16th August, 1871.

[We believe that several other well authenticated cases of the occurrence of *C.*

Hera in the South and West of England have occurred during the last ten years. Possibly those entomologists who are acquainted with such captures will favour us with an account of the circumstances, so as to form a tolerably complete record. There can be no doubt that the species has more right to a place in the British List than many now existing therein. Our younger readers should, however, remember that specimens from the Continent (perhaps we may say, from the Channel Islands) can be purchased for a nominal sum.—Eds.]

Notes on Sesia chrysidiformis.—This clear-wing appears to be rather more numerous here than it was last season; had we had more favourable weather, I have no doubt a goodly number would have been taken; as it is, several entomologists, who recollect many fruitless hours in 1870, think themselves tolerably well off. I suspect the insect has been compelled to betake itself to sorrel as a diet, for few dock-roots have been left on those parts of the Warren where it formerly abounded. I brought home two or three roots, from a new locality, early last year, but only one imago put in an appearance. I then placed the old blackened roots in a box covered with gauze, but without sand, expecting nothing from them, yet not liking to throw away even a faint chance. On going to the box the other day there were three freshly-emerged specimens. Moral: always save your old dock-roots. The imago emerges between nine and twelve, but one came out in the afternoon. When the larva is full-fed, it ascends to the higher parts of the roots, lining its tunnel with silk, and there turns to pupa; some even spin up in the lower parts of the thick stems. When about to change, the chrysalis wriggles itself partly out of the tunnel through a hole previously prepared, but blocked up with frass or mining refuse; these empty pupa-cases then resemble those of *Z. asculi*, seen in the stumps and sides of trees.—HY. ULLYETT, Folkestone, July, 1871.

Captures of Lepidoptera in Sherwood Forest.—From June 12th to 16th I spent at Sherwood Forest, in company with the Messrs. Daltry, of Madeley, for the purpose of collecting *Lepidoptera*. The weather was very unfavourable, and had been so for some time previously; consequently imagos were very scarce. Sugaring was quite a failure, as indeed it seems to have been throughout the country during the first half of the season. We had most success in beating for larvæ, which were plentiful. The species taken were as follows, omitting the commonest:—*Thecla quercus*, larvæ common; *Charocampa porcellus*, one specimen flying about a sugared tree; *Hepialus velleda*; *Liparis auriflua*, larvæ in profusion; *Orgyia pudibunda*; *Pæcilocampa populi*, one larva beaten from oak; *Himera pennaria*, larvæ not uncommon; *Phigalia pilosaria*, larvæ very common; *Nyssia hispidaria*, larvæ from oak; *Amphydasis betularia*; *Tephrosia biundularia* and *punctulata*, rather common, at rest on trunks of trees; *Iodis lactearia*, *Ephyra punctaria* and *pendularia*, rather common; *Panagra petraria*, very abundant amongst *Pteris aquilina*; *Aspilates strigillaria*, on the heath; *Hybernia defoliaria*, larvæ abundant; *Cheimatobia boreata*, in the larval state; *Emmelesia decolorata*, *Eupithecia pulchellata*, *castigata*, *vulgata*, and *exiguata*, *Thera variata*, *Melanthia ocellata*, *Coremia unidentaria*, *Cidaria corylata*, *Eubolia palumbaria*; *Stauropus fagi*, a beautiful male specimen, at rest on a young oak; *Euperia fulvago* and *Cymatophora flavicornis*, larvæ not uncommon on birch; *Neuria saponaria*, at sugar; *Tæniocampa cruda* and *miniosa*,

larvæ common on oak; *Agrotis aprilina*, larvæ; *Hadena thalassina* and *contigua*; *Anarta myrtilli*, on the heath; *Amphipyra pyramidea*, larvæ plentiful on oak and birch; *Euclydia ni*, *Herminia barbalis*, *Halias prasinana*, &c.—GEO. T. PORRITT, Huddersfield, August 14th, 1871.

Natural history of Agrotis corticea.—Few things have afforded me greater satisfaction than my having been able to figure and describe, I believe for the first time, the larva of this species,—one of those subterranean, dull-coloured larvæ, several species of which may so easily be mistaken one for another.

To Mr. George Norman, of Forres, my best thanks are due for the supply of eggs, which reached me on July 17th, 1870. The larvæ were hatched between the 20th and 25th of the same month; those which I kept under my own care had grown to the length of half-an-inch by August 15th, and by October 5th to one inch three-eighths, and, soon after November commenced, left off feeding, being, as I thought, ready for pupation; however, for some reason unknown to me, they all died without changing.

Meanwhile, the larvæ of which Mr. Hellins took charge grew more slowly, not being more than three-quarters of an inch in length when their hybernation commenced, and, luckily, several of them survived the winter; these began to feed again in March, moulted about the beginning of April, and were full-fed from about the end of April to the middle of May. The moths appeared between the 17th of June and 6th of July.

The egg is somewhat the shape of an orange, but with its under-side more flattened, with irregular, shallow ribs and reticulations over its surface, and a central boss or knob in a little depression on the top. It is straw-coloured at first, afterwards of a flesh colour, with pale brown zone or blotches.

When first hatched, the larva is of a greenish-grey, with blackish-brown head and plate behind it, the usual dots black and furnished with hairs. After feeding for a few days, it becomes of a greenish-ochreous tint, and in another week of a greenish-olive, one example alone at this stage having been of a reddish-grey; the dots raised and still furnished with noticeable hairs.

Up to this time, and for a few days longer, we found the habit of this larva was to feed uncovered on any of the various fleshy-leaved plants offered to it, at first eating only the cuticle, but soon making holes in the leaves of *Chenopodium album*, *Polygonum*, clover, &c.; but, when the length of half-an-inch, or thereabouts, had been attained, and the usual *Agrotis* appearance put on, it began to burrow in the loose soil, hiding by day, and coming out to feed at night. Later in the year, and again in the spring, the food supplied was dock, mullein, hollyhock, and slices of carrot; and, in dull weather, if fresh food was put on the surface of the soil, and shaded from the light by leaves thrown over it, we found it would be eaten as readily by day as by night. From the time the larva is about half-an-inch in length up to about an inch, its colour is ochreous, with a dark, double dorsal line, and two lines on each side; the usual warts small and dark brown.

After its final moult, it comes out at first very much darker than before, with quite a noticeable appearance of sootiness over it; all the lines being purplish-black and much diffused; the skin also presents quite a rough surface, and, although this is afterwards partly lost, yet it remains as a distinguishing feature to the end.

When full grown, the larva is $1\frac{3}{8}$ to $1\frac{5}{8}$ inches in length, according to

measurement in repose or motion; rather thick in proportion, cylindrical, and rugose; all the legs short and placed well under the body; in fact, it much resembles *segetum*, save in the rugosity, and in the further distinction, that, whereas the back in *segetum* is coloured differently from the sides, in *corticea* the colour is spread uniformly over both alike: the ground colour then of the full-grown larva is brownish-grey, finely freckled with a rather darker tint of the same; the belly and pro-legs with a slight greenish tinge, and unfreckled: the dorsal vessel is of the ground colour, scarcely paler, enclosed within two lines of darker brown. The sub-dorsal is a dark line of grey-brown, with a fine thread of paler along its lower edge, followed at a little distance by another such pale and rather thicker line, though much interrupted or broken by the deep wrinkles of the skin: at some distance again below runs the sub-spiracular stripe of the same paler, greyish-brown, with a streak of the ground colour through the middle of it; the head has the front margins of the lobes broadly streaked with blackish, and a little at the sides also, and the mouth is large and sometimes blackish: the plate on the second segment is not so noticeable as usual in this genus by any difference in colour, though it is a little darker brown towards the margin in front; the dorsal and sub-dorsal paler threads are faintly seen to pass through it.

As the larva approaches full growth the skin becomes somewhat shining, and the warts which immediately after the last moult came out black, grow paler in the centre and are of a dark brown all round it, each still furnished with a short, fine bristle; the black spiracles are rather small in size.

As noticed before, the general appearance is more unicolorous than that of any species of *Agrotis* I have yet seen.

The pupa is of the ordinary *Agrotis* form, rather stout and very smooth; at first whitish, and changing by degrees to a light orange-brown.—WM. BUCKLER, Emsworth, July, 1871.

Natural History of Hybernia aurantiaria.—On Nov. 6th, 1868, Mr. J. R. Wellman captured three pairs of moths *in cop.*, and very kindly sent on to Mr. Buckler the eggs laid by the females during the next two or three days. The larvæ were not hatched till just about the middle of March, 1869; were fed by me on birch; came to their full growth and spun up about the middle or end of May, and the moths appeared Nov. 4th—13th.

The egg is flattened and somewhat brick-shaped, but with one end more conical; the shell is stoutly ribbed, and reticulated, its appearance under a lens reminding one of coarse basket-work; the colour is at first green, afterwards puce, then reddish, with a long central, blackish spot, and lastly, just before the hatching, smoky.

The newly-hatched larvæ are small in proportion to their full grown bulk; smooth, dark brown on the back, with a yellowish dorsal line, and a more distinct yellow spiracular line; the head brown, a fine pale yellow transverse streak on the second segment; the belly dusky. After the first moult the brown disappears, and the colour throughout becomes olive-green; the next moult results in a pale, olive coat, with the middle of the back still paler; but after the third moult the back begins to show decidedly yellow again; the sides are tinged with brown, and the spiracular line also recovers its yellow; and from this time a nearer approach is made to the appearance exhibited at full growth.

When full grown the larva is rather over one inch and one-eighth in length, in shape moderately slender; viewed from above it appears of nearly uniform stoutness throughout, but viewed sideways the segments 7—10 are rather stouter than the rest; the head is broad, flattened in front, and rounded at the sides, so as to be equal in width to the second segment, which—together with the third and fourth—is a little flattened also; the fifth is more cylindrical, and hence has the appearance of being a trifle thinner than the rest; the skin is tough, furnished with a few bristles, and the back of the second segment is glossy, suggesting a sort of plate there; a pair of rather conspicuous warts on twelfth segment.

Probably there are variations more or less in the colouring, but the larvæ I had were alike, and might be roughly described as being of a dark purplish-brown with yellow markings; but to pick out the arrangement of the markings was no easy matter. The ground colour of the back was pale, dull, ochreous-yellow, and through it a number of fine, brownish lines, not parallel throughout, but approaching and receding, so as to form a pattern; of these two very fine ones through the centre of the back, enclosing a thread of the pale ground; on either side of this pair another darker brown line, and then again another wavy one, touching the broad, deep, purplish stripe which occupied the side from the head to the twelfth segment, on which it mounted up the back, and meeting the stripe from the other side, formed there a Λ mark pointing forwards, and bearing on it the warts of the same colour; below the broad stripe a pale yellow thread, and below this a blackish-purple thread; in the spiracular region, the front of each segment sulphur-yellow, the hinder part dull ochreous; here also could be seen indications of two fine, purplish lines, showing at the beginning and end of each segment, but leaving a clear space for the black spiracles; another line of the same colour below, thickening under each spiracle: the belly dark purplish-brown, with a central, pale, yellowish stripe, opening widest and enclosing a short, black streak in the middle of each segment, and edged with black; a very fine, pale, yellow line also through the dark purplish-brown of each side of the belly: the head horny, and dull reddish in colour, with a transverse band of dark greyish-brown across the face; legs and hinder part of anal segment α dull brownish-ochreous.

The cocoon is formed of brownish silk inside, slight but close in texture, and outside of fine particles of earth, and placed just below the surface; the pupa is stoutish in front, tapering rapidly behind, ending in a stout spike with two fine points; in the male the wing cases short, and the antenna cases distinct, showing pectinations; the skin smooth and shining, reddish-brown in colour.—J. HELLINS, Exeter, July, 1871.

Description of the larva of Acidalia strigilata (pratensis, Bdv.).—On the 28th of August, 1870, I received from my friend, Mr. J. P. Barrett, of Peckham, eight young larvæ of this insect, obtained from eggs deposited by moths captured by him during the previous month at Folkestone. They fed on *Polygonum aviculare* until autumn, when they began to hibernate, having attained the length of about three-quarters of an inch. At the beginning of April, not being able to procure knot-grass for them, dandelion was substituted, on which they at once commenced to feed, showing a preference for the withered leaves. By May 12th, the only larva I had left had reached an inch and a quarter in length, and on June 2nd, it being nearly full-grown, I took down the following description:—

Length: nearly an inch and a half, cylindrical, very slender, and tapering slightly towards the head. Head not notched on the crown, about as wide as, perhaps a little wider than, the second segment; the face slightly flattened, and the cheeks globular. Skin ribbed transversely, which gives it a rather rough, though uniform appearance.

The ground colour is grey, tinged with green; the head grey, faintly variegated with very pale brown. Of the longitudinal stripes, the most distinct is the narrow, dull green, medio-dorsal line; the sub-dorsal and spiracular lines are very inconspicuous, and seem to be composed of confused, waved, faint brown lines; spiracles very small, brown. On the centre of the back, and on the extreme anterior edge of the 6th, 7th, 8th, and 9th segments, is an intensely black square mark, divided into two distinct spots by the medio-dorsal line passing through the centre: slightly in front of each of these marks are two other equally black, but smaller dots, one being a little to the right, the other to the left, and placed at the posterior edge of the segments. The belly is pale greenish-grey, with a still paler central stripe, and on each side of this stripe are one or two very faint, pale brown, zigzag, longitudinal lines. In the middle of June it spun its cocoon (which was more firmly constructed than those of other species of the genus I have had) at the foot of the knot-grass on which it had been feeding.—GEO. T. PORRITT, Huddersfield, *July 13th, 1871.*

*Re-occurrence of *Aplasta ononaria* at Folkestone.*—I had the pleasure of taking *Aplasta ononaria* (a fine female) here on Monday last.—WM. PURDEY, 15, Grove Terrace, Folkestone, *June 23rd, 1871.*

Butalis cicadella at Weybridge.—On Saturday, the 1st July, I caught, I may say accidentally, an example of this exceedingly rare British species, on the heath near Weybridge Station. I believe specimens have been taken by Mr. S. Stevens, but I know not the locality. The original individual was taken at Brandon, Suffolk, many years since, by Mr. Dunning.—R. McLACHLAN, Lewisham, *10th July, 1871.*

*On the habits of the larva of *Mycetobia pallipes*, Meigen (Diptera).*—I have several times found this larva under the bark of large fallen pine-trees, which have been infested by the larvæ of *Tomicus stenographus*. It is met with among the detritus and excrement left by these larvæ, and often in company with that of a *Nylota*, and of *Rhyphus fenestralis*. Without these larvæ the detritus would become dry; their presence turns it into a kind of mucilaginous paste in which they swim and wriggle. Lyonnet found the larva of the *Mycetobia* in the humid mould of willows, Léon Dufour in the morbid secretions of the ulcerated wounds of elms. I have myself found it in the wounds of pear and apple-trees produced by the caterpillars of *Zenzero asculi*. Thus one sees that it always lives under similar conditions, without regard to the kind of tree in which those conditions are realised.

When, being under the bark, it wishes to change to a pupa, it seeks the gallery of the *Tomicus*, and follows it until it arrives at the exit hole. Close to this hole, or sometimes in its interior, it undergoes its final change, so that the perfect insect, incapable of piercing the bark, finds an easy exit.—E. PERRIS ('Insectes du Pin Maritime,'—Diptères), in *Ann. Soc. Ent. de France*, 1870, pp. 188—189.

[We have extracted and translated the above interesting notice as an instance of the fact frequently observed in the habits of insects, that some species, without being actually parasites or carnivorous, are, nevertheless, dependent upon, or take advantage of others for their very existence. The part of the French Annals in which it occurs will henceforth be of historic interest. It purports to be the "deuxième et troisième trimestre," for 1870, and on the cover is dated 31st December, 1870. It arrived in London only during the month of June. The meetings of the Society have been held regularly, during all the troubles, in the house of the Assistant Librarian, M. Fallou, though we hear that often not more than five members were present.—Ebs.]

Is the 'instinct' of bees ever at fault?—It is generally considered that one of the best proofs of the superior intelligence of bees is shown in the manner in which they find their hives or nests, though their 'business' may have led them immense distances from home. This evening, a circumstance occurred which leads me to imagine that, however great may be their appreciation of locality in its comparatively broad sense, they sometimes fail to unerringly remember exact spots. At 8 p.m. I observed an *Osmia*, evidently returning home after its day's work, angrily buzzing about my garden wall. I watched it for fully ten minutes, and during that time it entered all the crevices in the bricks or mortar for a space of at least three yards; going in and disappearing and immediately emerging. However, at last, it evidently found the right crevice, and was seen no more. Can its potations of nectar have had any effect upon it similar to that sometimes experienced by animals far higher in the scale when returning home late at night?—R. McLACHLAN, Lewisham, 16th July, 1871.

Law of Priority versus Accord.—Mr. Lewis' valuable paper on Scientific Nomenclature has produced supporters of the so-called "law" of priority, as endeavoured to be extended in the present day. The "law," as I have always hitherto understood it, is that, *when different individuals have described the same insect at different times under different names, the name first given shall have priority over all subsequent names*; but, like all laws that lay down a *general precept* only, it must be construed in the spirit in which it was made, which is, as I urge, only as a *means of determining a right to a name when there is no accord*.

I believe I am correct in stating that the "law" has hitherto, by common accord, been confined to names given since the binomial nomenclature, and to the "language" of "Entomological Latin,"—two points lost sight of by Mr. Kirby in suggesting *Gryllo-talpa*, Aristotle? and also, as I have always hitherto considered, as subservient to, and as a means of promoting, *accord*. If once it is to be held that the law is superior to accord, no such limits can be assigned to it. No final date of 1746, 1758, or 1767, as urged by Mr. Kirby, can be laid down as a starting point; for such a starting point could only be fixed by accord, and if once we say that the "law" is paramount to accord, under what authority could we find such a starting point? In such event, every insect *capable of identification* must henceforth carry the name under which it was first called—no matter by whom—no matter the language. The American fire-fly must bear its Indian appellation—the "Palmer worm" and "Canker worm" must have their "prior" names restored. We must carry the law back without limit—even to chaos itself—the only result of which would be that Entomological Nomenclature would soon resume its "lost ancestral form."

It must be remembered that this is not the *only* "law" now in use to promote accord; where the same person describes *different sexes* of the same insect under different names, another "law" comes into operation—the entomological "jus mariti"—a "law" made to aid "accord" in cases where the "law" of priority cannot. I own that this "jus mariti" has recently been condemned by the dictum of an eminent "catalogologist," but as the dictum was only based upon a debatable theory, it has found few (if any) supporters. The whole scope and operation of these two laws—the "law" of priority and the "jus mariti"—clearly point that they were intended as special laws meant to make, not subvert, accord.

I look upon the *accord* of entomologists as a "law" of itself, governing and paramount to both these special "laws;" where there is want of accord we have resource to one of them to obtain that accord, *but, where accord exists already, I say that we have no right to call either law into operation*; they are not wanted, and I look upon the present resurrectional movements as a tortuous application of a useful law.

t¹ Mr. McLachlan, in answer to Mr. Lewis, says: "By applying his maxim '*communis error facit jus*, Mr. Lewis would draw a line and say, henceforward there 'shall be no change; whatever may be the errors, or however glaring and ridiculous they may prove in the sequel, from this time they shall pass uncorrected; nay, more, they shall no longer pass as errors, but as unimpeachable truths.'" Will Mr. Lewis' paper possibly bear a construction of this sort? *accord* is his dominant point; the proposition there laid down is, "*No name shall be received henceforth to the displacement of a universally recognised name.*" Both sides agree that the accord of entomologists is the *ultimate* desideratum, but the "resurrectionists" seem to consider that fishing out the most ancient name and repealing all the subsequent, is a better way of arriving at that result than by letting a name accepted by common consent stand, and abrogating the obsolete!! I hold, as I have before stated, that the "law" of priority is *not* that the *oldest* name of an insect is invariably its right one, as the resurrectionists now insist, but that, *in cases of dispute, the prior name is to be preferred*, and in such cases only; and that any attempt to subvert accord cannot be done under the "law" of priority, but we must make a new "law," the "law" of antiquity, say, were the scientific names created or evolved at the same time as the insects themselves; such a law might be useful as indicating the remoteness of their origin; but surely Mr. McLachlan will agree that there were more *real errors* in the infancy of the science than now. Mistaken information and limited observation naturally produced "errors" in nomenclature, or if not errors, objectionable names, which progressive science has since corrected or altered by common accord; and now we are asked to say that all the accord of entomologists shall never correct, alter, or vary any original name, whether right or wrong; that the original name shall be used, in many cases, to upset the corrected mistake, and *restore* the original pure, unadulterated "error"!!! Shall entomological science be progressive in everything except names? In most cases the name now in use is the far preferable one, having some more immediate relation to the creature's habits and mode of life, *or else the name now in use would never have been chosen by common consent*; for we cannot suppose that all the well-known names now condemned by the "resurrectionists" were chosen in *ignorance* of the prior name. They were, in many cases, chosen because it was more beneficial to

science that they should be chosen; and this choice by accord, this ancient usage of entomologists, which has been always acted upon to the present time, is now attacked and condemned, and we are told we *must* use the "prior" name, and no longer be allowed to use the name that those who have gone before us exercising their reason have preferred; is not *this* degrading to science?

M. Boisduval, commenting on the want of uniformity in English and Continental nomenclature, confines his observations to cases where the insects were "already described under other names, and were *well known by those names.*" In such cases there was of course no accord, and they were very proper cases for the "law" of priority to determine.

Another point seems to have escaped the "resurrectionists:" if a name be sunk it follows that all dependent and derivative names ought to be sunk also. *Dictæa* appears in a recent list under the name *tremula*; what, then, shall we do with *Dictæoides*? If we changed it to *tremuloides* we should be met with the objection that *Dictæoides* was the "prior" name,—an example of the inextricable confusion we shall create by the resurrection-reading of the "law."*

Again, Linnaeus himself, as Mr. Kirby states, repeatedly changed the names he had given—no matter his reasons for so doing,—possibly he considered the change a benefit to science; possibly as Linnaeus' names, as he himself tells us, were "trivial," the change was purely arbitrary; but he changed them when the names were trivial, and mattered little, for trivial names cannot *injure* science as they can perpetuate no "error;" but now that science has progressed, and names are, as a rule, no longer trivial,† accord is not even to be allowed a choice. The "resurrectionists" will, of course, have to hold all Linnæus' later names as "errors,"—a conclusion certainly never contemplated by the great father of entomology.

Mr. Kirby is again unfortunate where he says, "if the 'law' of priority were rescinded no one would any longer take the trouble to identify any species he intended to describe as new, and we should soon have twenty new names for every "old name which otherwise would have been restored." But no one has ever proposed that the law should be rescinded; Mr. Lewis' observations extend only to cases where common consent has accepted a more modern name; if there were twenty such names, where would the accord be? The "law" of priority would come into operation and decide the name, and the insect would go forth to the world in all the multitudinous modern books, and more multitudinous modern lists, under that name; if, then, it were discovered, after the lapse of an entomological "epoch," that the decision of the "law" of priority was in fact wrong, and that some ancient author, whose name few knew, had called the insect by a name which no one had ever heard, shall we be compelled to accept such obsolete name? and so multiply synonymy, by rendering it necessary to attach the *known name* as a *synonym* of the prior unknown, in all our future works, until the present generation, and their nomenclature with them, have passed into oblivion; or shall we not rather reply with

* As, when a name is superseded, it must be superseded, not only in one list, but in all, the followers of "Doubleday's list" will have to teach their children that *Notodonta Dictæoides* was so called because it resembled an insect that *never did exist*, that it was placed in a genus that gave it attributes it did not possess, and that it belonged to a group that resembles a group they did not allow.—T. H. B.

† Staudinger ignores several modern instances of Trivial Nomenclature, and says that such cases ought to be treated as if the insect *had never been named at all*; but such an "ipse dixit," without accord, is perfectly valueless, as different entomologists may hold different opinions on what constitutes the difference between a *scientific* and a *nonsense* name,—*Satyrus imbecille* is a nonsense name, *Mithymna imbecilla* purely scientific !!!—T. H. B.

Mr. Lewis, in the language of a celebrated statute, "*Nolumus nomina insectorum mutare quæ usitata sunt et approbata.*"—T. HENRY BRIGGS, Lincoln's Inn, July 12th 1871.

Systematic Zoology and Nomenclature.—The first requisite for the accurate discussion of any subject is an appropriate nomenclature. The great influence Linnæus exerted upon the progress of zoology is due to the universal acceptance of the binomial system, admirably adapted to bring order into the chaos of names of innumerable animals and plants previously known in each country simply by their vernacular names. In the hands of Linnæus it was the expression of vast erudition, the statement of the affinities of animals and plants, the formula for the classification of the organic world as he understood it. In the hands of his followers and disciples it has become too often the end instead of the means; and, of late years, the laws requisite for the establishment of the correct name of an animal, or of a plant, have become often as difficult to establish as the most intricate legal question. The name of an animal or plant is that binomial combination which it has first received. Subsequent changes, such as the transfer to a different genus, are simple matters of registration. Unfortunately the writing of the authority after such a change is often considered as an honour by naturalists,* and much valuable time is lost in ransacking old books to find out incorrect combinations, which are subsequently corrected with great flourish of trumpets, as if this process advanced our knowledge of the affinities of the animals under discussion. No naturalist ignores wilfully what others have already done before him; it is generally from absolute impossibility to obtain the desired information; and if the question of nomenclature were generally regarded simply as a matter of registration, it would help to rid our systematic treatises of a mass of useless lumber. (The rules of nomenclature generally adopted are by no means satisfactory. The exceptions constantly taken to their application only increase the confusion; and the attempts made by the British Association to recommend a set of rules for the guidance of naturalists, have not been successful. The recent revision of those rules shows how impossible it is to lay down general instructions intended to be retrospective and prospective; to apply them to times of which the scientific spirit was so totally different from our own. *All that we can, with any justice, demand, is that the original name by which a species was first baptised, should be recognised to the exclusion of all others, if it be possible to determine this name with accuracy.*)

The facility with which, in a new country, unknown animals can be described, and notoriety thus readily obtained, is a strong incentive to go on with descriptive work; not that I would, as is frequently done, deny all value to systematic zoology, but it should not be forgotten that the true purpose of systematic work must be to increase our knowledge of the relationship of animals of any special group already known, and serve in some way as a connecting-link in the chain of the various branches of zoology. Working in this spirit, systematic zoology helps us in our attempts to understand the laws of nature; these must remain unintelligible to him who is busy with naming and classifying materials, reducing his science to an art, merely accumulating facts to be stored in museums, forming, as it were, a library of nature. To him its laws will be as inexplicable as are the laws of the motions of planets to one who has no knowledge of the existence of gravitation.—ALEXANDER AGASSIZ, in the '*American Naturalist*' for August, 1871 (*abstracted*).

* This remark refers more particularly to a practice much in vogue amongst some American naturalists, but which is happily of rare occurrence with those of Europe. The species is attributed by them to the author who transferred it to its present genus, and not to the original describer.—EDS.

ON INVOLUNTARY MIGRATION IN INSECTS.

BY F. BUCHANAN WHITE, M.D.

In the second part of the Transactions of the Entomological Society for 1871, Mr. Albert Müller gives an interesting paper on the effects of atmospheric agencies in the dispersal of non-migratory insects, and brings together many records of insects having been found on Alpine snow, which he aptly terms the wreck-chart of the atmosphere, "spread out for those who will read it."

I have lately had an opportunity of studying some cases of involuntary migration of insects through atmospheric agencies. One, in which the migration had just taken place, and in which the result, at least of the majority of insects that fell under observation, was death; and another, in which the migration seems to have taken place at a more distant period, and in which the result would appear to have been an alteration in the habitat, food plant and habits of the insects.

The first case came under the observation of Dr. Sharp and myself, during a recent visit to Benmuedhu. Near the summit of that mountain, and at about 4,000 feet elevation, were some large patches of snow, which, on examination, were found to be thickly strewn with insects, no less than six orders being represented. It is worthy of note that none of the hill-insects proper were found, though both *Anarta melanopa* and *Psodos coracina* occurred on the mountain—the former both at a greater, and at a less, elevation than the snow fields.

Probably, to use Dr. Sharp's words, they knew better; that is to say, they, by their habits, guard against any involuntary migration, by sheltering themselves from the wind under the rocks and stones. That *Psodos* is especially cautious we saw, on a windy day, on another hill, where, though the moth was tolerably common, not a specimen could be seen, except by turning over stones, under which the insects had taken refuge.

Before passing on to the second case, I shall briefly notice the principal insects found by us on the snow fields.

In *Colcoptera*: *Notiophilus biguttatus*, *Acidota crenata*, not uncommon; these two alone of all the insects were at all lively. *Bryoporus rugipennis*, *Arpedium brachypterum*, *Oxytelus tetracarinatus*, *Homalota eremita*, *Mycetoporus tenuis*(?), *Philonthus marginatus*, *Salpingus ater*, *Hylastes ater*, *Hylurgus piniperda*, *Telephorus elongatus*, *Sericosomus brunneus*, *Aphodius lapponum*, *Coccinella ocellata*, *obliterata*, *hieroglyphica* (in great abundance, and an entirely black variety not common), and *variabilis*.

In *Hymenoptera*: a species of *Nematus*, and several *Ichneumon*s.

In *Neuroptera*: several *Trichoptera*, belonging to the genus *Limnophilus*, and one of the *Perlidae*.

In *Hemiptera*: *Heterocordylus tibialis*, *Gastrodes ferrugineus*, a *Salda*, which escaped, *Iassus fruticola*, &c.

In *Lepidoptera*: *Arctia plantaginis*, five or six, all ♀, *Eupithecia nanata* and *callunaria*, *Penthina* sp., *Phloxopteryx biarcuana*, *Retinia cosmophorana* and *coniferana*, *Pyrausta purpuralis*, *Herbula cespitalis*, *Gelechia ericetella*, *G. longicornis*, &c., &c.

In *Diptera*: several *Tipulæ*, one of which is, I think, *excisa*, Schum., a *Bibio*, and several *Syrphi*.

Altogether there were about fifty species of insects on the snow.

The subject of the second case of involuntary migration is *Eremocoris erratica* (*Hemiptera-Heteroptera*), a species which, according to "British Hemiptera," is usually "taken singly, by beating juniper-bushes," but which, in at least one instance, has been found more gregariously under dead leaves; this, however, at a time of the year (April) when the individuals in question may still have been in winter quarters. I have found this bug, though rarely, upon both juniper and pine; and, believing it to be entirely confined to these two plants, it was with some astonishment that I saw it living in small companies, below stones on the bare and treeless summit of Mòr Shròn, and far away from either juniper or pine.

At first I thought that the mountain insect might be a different species from the pine one, but I find that it is identical; and, till my visit to Benmuedhu, I could not understand how the *Eremocoris* came to be found under such different circumstances. After seeing, however, the great number of insects displayed on the "wreck charts" of that mountain, I have begun to think that we have here an instance of involuntary migration, which has resulted in the establishment of a colony of insects, with habits modified to suit their changed circumstances. Thus, instead of being dwellers in the valley, they have become dwellers on the mountain; instead of inhabiting trees or bushes, they live under stones; and instead of deriving their sustenance from species of *Coniferæ*, they feed upon (I think) *Empetrum* or *Calluna*. That the insects in question are not, like the Benmuedhu specimens, recent emigrants, is sufficiently shown, I think, by the fact that all stages—larvæ, pupæ, and perfect insects—are to be found under the stones on Mòr Shròn; and that they are not voluntary migrants is probable from the circumstance that in the interval between the pine woods and the summit of the mountains, no specimens have been found.

Under such a mode of life the occurrence of some variation would not have been wonderful ; but, as I said before, the mountain insect and the pine one appear to be absolutely identical.

Braemar, July.

ON A *CECIDOMYIA* FORMING GALLS ON *PTERIS AQUILINA*.

BY ALBERT MÜLLER, F.L.S.

While the list given by Bremi (Beitrag zu einer Monographie der Gallmücken, p. 62) shows that almost every family of plants furnishes sustenance to the larvæ of gall-midges, the ferns have hitherto been conspicuous by their absence from the list ; and for this very reason I have generally neglected their examination, acting on the erroneous notion that, if others found nothing, it was of no use for me to go over barren ground. So thoroughly had this error biassed my mind, that when, in 1867, my late friend, Mr. Armistead, of Leeds, sent to me specimens of rolled leaflets of the frond of the common bracken, without a trace of insect life, I was willing to call the roller anything rather than a *Cecidomyia*. Hence I only alluded to these productions in the "Zoologist," 1868, p. 1201, as follows : "Leaflets discoloured, 'either reddish or black, rolled up or otherwise distorted. 'Are very 'common here, Allonby, Cumberland.' W. A. in litt. August 9th, "1867."

But, since then, *Filices* have been examined by me on one very possible occasion, and discoveries by others, to which I shall allude on their completion, have lately increased my interest in the work ; and the reward has come. A stroll up to Shirley on Sunday last to a favourite spot of mine, near the Archbishop's palings, will be fixed in my memory as being the occasion of finding reddish, fourteen-jointed larvæ of a *Cecidomyia*, each snugly ensconced in the rolled and laid down leaflets of fronds of *Pteris aquilina*. Often, the majority of the leaflets of a frond are thus tenanted each by one larva. The affected leaflet is at first neatly folded, or laid down lengthways on the under-side of the leaf, in which state it is pale green ; subsequently it becomes a cigar-shaped roll of reddish colour, and at last it resembles nothing so much as a black pudding in miniature. The latter stage signifies that the larva has left it to undergo its metamorphosis underground ; at all events, I have examined scores of these black rolls without meeting any pupal skins. To the best of my knowledge, no gall-midge has as yet been detected on the bracken ; and, although I anticipate that some sys-

tematic friends will grumble, I prefer to abide by father Linné's axiom, "*sine nomine perit cognitio rei*;" so I propose for this gall-midge the name of *Cecidomyia pteridis*, on the following grounds:—

1. Its mode of life singles it out from all its numerous allies.
2. Experience in numerous analogous cases, therefore, warrants my calling it a species new to science.
3. Descriptions from caught midges, without any record of their lives, being practically useless, are, therefore, generally slighted by the field naturalist.

South Norwood, 16th September, 1871.

BITTACUSAPTERUS, NOV. SP.

BY R. M'LACHLAN, F.L.S.

Some time since, my friend Dr. Hagen made to me the startling announcement, in one of his letters, that an apterous species of *Bittacus*, the singular tipuliform genus of *Panorpidæ*, had been recently discovered in California. Within the last few days the announcement has been followed by the liberal present of two pairs of that most extraordinary insect, accompanied by the request that I would immediately describe it, which I now proceed to do. My first impulse was to look for some character which might possibly be considered as of generic value; but the insect appears to me to present no one structure that would warrant such a generic separation; for I cannot regard the absence of wings as sufficient in itself to necessitate the placing of it in a special genus. This absence of organs of flight is most complete in both sexes, there not being even an indication of the slightest rudiments, which one would certainly expect to find, taking into consideration the ample wings of all the other species.

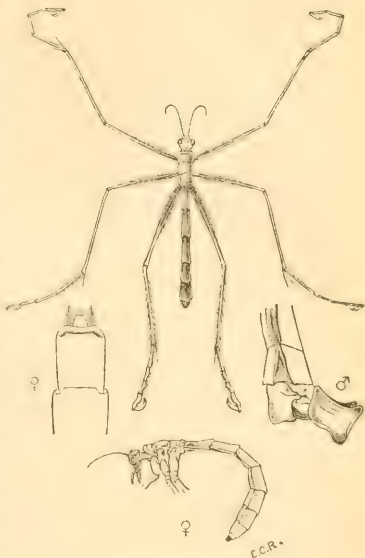
BITTACUSAPTERUS, n. sp.

Rufo-griseus (vividus, viridescens), apterus. Rostrum linea nigra utrinque signatum. Pedes pallidiores, femoribus tibiisque setis nigris parce instructis; tarsis infuscatis, subtus setis nigris dense instructis. Abdomen obscurior, lineis geminatis, nigris, sub-obsoletis, utrinque signatum. Appendices ♂ magnæ, foliaceæ, truncatæ, sursum directæ, margine apicali antice producto: penis recurvatus, infra appendices situs. Abdomen ♀ in processus duo spiniformes breves desinens.

Long. ♂ 10''' (=21 mill.); ♀ 10½''' (=22 mill.).

Habitat: California.

♂. Head and thoracic segments above clear reddish-testaceous; eyes black; ocelli shining, the median one surmounted by a short, black, setiform spine, directed forwards; antennæ short, the two basal joints stout, the thread very fine, furnished with short hairs in the apical portion; rostrum with a blackish line on each side; and there is also a faint, fuscous, geminate line on each side of the head, behind the eyes; palpi clothed with short blackish hairs. On the anterior margin of the pronotum are three small blackish tubercles on each side, and on the posterior margin one on each side; legs reddish-testaceous, the coxæ paler, yellowish, a short blackish line on each trochanter internally; femora and tibiæ furnished with sparse, short, black setæ, apex of tibiæ blackish; tarsi thickly set beneath with black setæ, infusate, second joint of the thickened posterior tarsi blackish in its basal two-thirds, third joint with a broad sub-median blackish ring; abdomen reddish-grey, paler beneath the lateral membrane between the dorsal and ventral surfaces, grey; the first and second (second and third ?) segments sub-cylindrical, the second slightly the longer, third to sixth stouter, clothed with very fine and short grey pubescence visible under a strong lens; on each side of the abdomen are short, geminate, very indistinct, blackish lines; terminal segment furnished with a pair of very large, foliaceous, yellow appendices, directed upwards nearly at right angles with the dorsum of the abdomen; in form each appendice is irregularly oblong, concave internally, superior margin strongly excised, the inferior slightly sinuate, the apical margin sharply truncate, the superior angle being obtusely produced; the last ventral segment, beneath the appendices, supports the base of the penis, which is strong, upwardly-curved, with the apical portion gradually attenuated to a point, and directed back again, so as almost to touch the base. On each flank of this segment is a very minute palpiform appendice, situated close to the angle formed near its articulation with the small upper plate to which the large foliaceous appendices are attached.



Bittacus apterus, M'L.

♀. The colours much as in the ♂; the pronotum would seem to have two tubercles on each side of the posterior margin, instead of one. The posterior tarsi are not in part blackish. The abdomen is laterally broader, decreasing towards base and apex; the apex is furnished with two short, straight, spiniform, hairy appendices, between which is a broad, short lobe, deeply excised at the apex, and below this lobe is a short, obtuse organ, which is probably the ovipositor.

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The discovery of this anomalous creature is due to Mr. Wm. Holden, of Charlestown, Massachusetts. His account of the locality and habits is as follows:—"Taken the last of April, 1871, at Brooklyn, Alameda Co., California, in a pasture. All the specimens (about 60) were captured in an area of 15 to 20 feet, under a live oak tree in a patch of thistle and wild mustard. They were most active just after sunset and sunrise, crawling about the stalks of the thistle and mustard, feeding on flies and other small insects. When the plants were shaken they instantly dropped to the ground, and concealed themselves in the grass. The colours when alive were brighter, the *green* resembling that of the plants on which they were found, so that it was not easy to distinguish them unless in motion. Their movements were slow and singularly awkward. Several specimens were taken *in coitú*. I examined many similar patches of thistle and mustard, but never found a specimen except in this one place."

I would here observe that there is no indication of *green* colouring in the alcoholised individuals before me, though one can readily suppose that a greenish-grey tint existed when living. In conclusion, I remark that Dr. Hagen informs me that the same gentleman found, probably in company with the *Bittacus*, males of a semi-apterous species of *Tipula*, a suggestive fact in these days of investigation of "protective resemblances."

My colleague, Mr. Rye, has kindly furnished me with the (slightly magnified) drawings illustrating this paper.

Lewisham: September, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 8).

BY H. W. BATES, F. Z. S.

Genus EGA.

Castelnau, Etudes Entom., p. 93.

Distinguished from *Chalybe* by the head being very convex above, and constricted behind into a narrow distinct neck. The terminal joint of the palpi is much enlarged, with an abruptly-formed membranous tip, mistaken by the author of the genus for the fourth joint, as in the *Bembidiinæ*. I cannot confirm Lacordaire's statement that the emargination of the mentum is toothed; the emargination is semi-circular and simple.

The species hitherto described are very closely allied, and difficult to be discriminated; the two following, however, are very distinct.

EGA NODICOLLIS, n. sp.—*Parva, minus elongata, testaceo-rufa, nitida, setis longis sparsis instructa; capite citius quam in E. formicaria pone oculos constricto, antennarum articulis 1—4, nec non 8—11, albo-testaceis, 5—7 fuscis; thorace medio sub-globo, antice posticeque angustato, juxta basin fortiter constricto; elytris oblongis, sulco transverso, prope suturam interrupto, leviter impressis, æqualiter sulcatis, interstitiis punctulatis, utrinque disco omnino nigro-cæneo, macula humerali rufescenti, alteraque transversa postica albo-testacea; pedibus flavo-testaceis.* Long. $1\frac{1}{2}$ lin. 1 exempl.

St. Paulo, Upper Amazons.

EGA BILOBA, n. sp.—*Parva, minus elongata, cupreo-ferruginea, nitida; capite mox pone oculos constricto; antennis robustissimis, moniliformibus, articulis 1—4 nec non 8—11 testaceo-albis, 5—8 nigris; thorace ovato, medio sulco profundo basin haud attingenti, in lobos duos diviso; elytris breviter oblongis, sulco transverso profundo, prope suturam interrupto, signatis; suprâ cupreo-fuscis, æqualiter sulcatis, interstitiis angustis, utrinque maculis duabus parvis, rotundatis, discoidulibus, testaceo-albis (quarum una ante, altera pone, medium) notatis; pedibus testaceo-albis, rufescenti-variegatis.* Long. $1\frac{1}{2}$ lin.

Banks of the Tapajos, at Santarem, running under dead leaves.

Genus APORESTHUS, nov. gen.

Corpus sub-depressum, glabrum. Caput ovatum. Antennæ filiformes, articulis 4—11 dense pubescentibus. Labrum antice truncatum, angulis rectis. Mandibulæ angustæ, elongatæ, apice leviter fulciformes. Maxillæ angustæ, intus sparsim spinulosæ, lobo exteriori æqualiter bi-articulato. Palpi omnes elongati, graciles, nudi, articulo ultimo sublineari, precedenti sub-æquali. Ligula elongata, angusta, antice sinuato-truncata, bisetosa, angulis truncatis, liberis; paraglossis angustis brevior. Mentum angustum, sub-æqualiter, acute trilobum. Thorax parrus, cordatus. Elytra ovata, sub-depressa, apice late truncata; stria marginali per apicem continuata. Pedes graciles, vix setosi; tarsi lineares, supra nudi, unguiculis simplicibus; maris articulis 3 anticis vix dilatatis, subtus bi-seriatim squamulosis. Epimera mesothoracica angusta, parallela, coxas haud attingentia.

The genus is distinct from the *Coptoderinæ*, *Lebiinæ*, and allied groups by the paraglossæ being non-adherent to the upper angles of the ligula. In the form of head and trophi it has much resemblance to *Diploharpus* (*Anchomeninæ*), but the form of the mentum and other parts of the mouth, added to the truncated elytra, seem to point to the *Odecanthinæ* as its approximate position.

APORESTHUS ANOMALUS, n. sp.—*Nigro-piceus, nitidus, partibus oris ar-*

ticulisque 3 basalibus antennarum rufo-testaceis, pedibus flavo-testaceis; elytris leviter æneo-tinctis, marginibus basalibus et lateribus explanatis testaceis, supra æqualiter striatis, interstitiis planis. Long. $2\frac{1}{2}$ lin.

Rio Janeiro. Taken by the late Mr. Squires.

Genus LOXANDRUS.

Leconte, Journ. Acad. Nat. Sci. Phil., New Ser., ii, p. 252 (1852).

Chaudoir, Rev. et Mag. Zool., 1868, p. 342.

This perfectly natural and well defined genus of the *Feronia* group has undeservedly shared the fate of the numerous loosely characterized divisions of this great assemblage, and been set aside as a synonym without sufficient examination. In Gemminger and von Harold's catalogue it has been fused, apparently at a random guess, with *Argutor*.

The following are its generic characters :—

Dilated joints of anterior tarsi of the ♂ cordiform, oblique, *i. e.*, inner anterior angles advanced.

Elytra without abbreviated scutellar stria, and with a single large puncture on the 3rd interstice.

Posterior tarsi grooved on each side.

Metathoracic episterna elongated.

Mentum with central tooth entire, obtuse at apex.

The absence of an abbreviated scutellar stria, and the presence of a single large puncture on the 3rd interstice, although apparently trivial characters, are important from their constancy throughout the long series of species of which the genus is composed. The elytra are remarkable also for the silky iridescent gloss with which they are, in the great majority of the species, adorned.

The *Loxandri* are of much slighter build than the *Feroniæ*, and in this respect remind one rather of the *Calathi*. They are most nearly allied to *Abacetus*, differing in the oblique anterior tarsi of the ♂, and in the thoracic foveæ not forming simple, sharp sulci. The head is of oval form, with moderately prominent eyes and short frontal foveæ; the thorax has a single, deep, and broad fovea on each side of the base. In habits they resemble the *Calathi*, living gregariously under heaps of dead leaves and sediment. They are peculiar to the tropical and warmer regions of the earth, and are the only representatives of the great *Feronia* group which I met with in the region of the Amazons.

Leconte and Chaudoir have described 19 species; but several de-

scribed by authors as *Feronia*, *Argutor*, &c., belong to the genus, such as *F. postica* and *irina* (Brullé Voy. de D'Orbigny), *F. confusa* (Dej. Sp.), and others.

The following species appear to be as yet undescribed :—

LOXANDRUS SULCATUS, n. sp.—*Elongato-ellipticus, nigerrimus, thorace elytrisq̃ læte iridescentibus, antennis, palpis, tarsisque rufo-piccis; thorace sub-quadrato, elytris multo angustiori, ante medium paululum rotundato-dilatato, angulis posticis obtusis sed distinctis, suprâ lineâ dorsali fortiter impresso, basi punctato utrinque foveâ elongatâ profundâ signato: elytris punctulato-sulcatis; subtus sternis omnibus abdominisque basi punctatis.*

Long. 5½ lin. ♂ ♀.

Of more slender form than *Pæcilus cupreus* (Auct.), with narrower and longer thorax; which is very gradually and slightly narrowed posteriorly, with obtuse hind angles. Colour a deep glossy black, with strong iridescent gloss on the thorax as well as on the elytra. The latter are sharply sulcated with a neat row of punctures in the bottom of the sulci.

Ega; under rotting leaves in the forest.

LOXANDRUS POLITISSIMUS, n. sp.—*Elongato-ellipticus, niger nitidissimus, suprâ splendidè iridescens; antennarum articulis duobus basalibus, palpis, labro, tarsisque rufis; thorace elytris multo angustiori, medio rotundato-dilatato, postice sinuato-angustato, angulis posticis prominulis, suprâ basi sparsim punctato utrinque foveâ elongatâ profundâ impresso; elytris fortiter striatis, striarum fundis punctulatis; subtus sternis omnibus abdominisque basi punctatis.*

Long. 4¼ lin. ♀.

A species remarkable for the intensity of its gloss and iridescence. It is further distinguished from the three following, which it much resembles, by the base of the thorax being punctured up to the hind angles. The thorax is considerably narrowed behind, and sinuate near the posterior angles, which are prominent and acute at the tip.

Ega.

LOXANDRUS LÆVICOLLIS, n. sp.—*Elongato-ellipticus, nigerrimus, politus, elytris sub-iridescentibus, palpis tarsisque fulvis, antennis ad basin piceo-rufis; thorace sub-quadrato, elytris angustiori, lateribus paululum rotundatis, postice gradatim leviter angustato, angulis posticis sub-rectis, haud prominulis, suprâ totidem impunctato, basi utrinque fovea elongata impresso; elytris punctato-striatis; subtus mesosterni episternis antice punctulatis.* *Long. 4¼ lin. ♂.*

The thorax is nearly square, the sides being very slightly rounded, and the base quite free from punctures.

Rio Janeiro.

LOXANDRUS CALATHOIDES, n. sp. — *Elongato-ellipticus*, *nigerrimus*, *læte iridescens*, labro, palpis, antennarum basi, tarsisque piceo-rufis; thorace sub-quadrato, ad basin elytris paulo angustiori, lateribus paululum rotundatis, angulis posticis sub-obtusis, haud prominulis, suprâ totidem lævi, basi utrinque foveâ elongatâ profundâ impresso; elytris profunde striatis, striarum fundis subtiliter punctulatis; subtus mesosterni episternis punctatis.

Long. $4\frac{1}{4}$ lin. ♂.

Very closely allied to *L. lævicollis*, differing chiefly in the conspicuously broader thorax, not perceptibly narrowed behind, and in the deeper elytral striæ.

Rio Janeiro.

LOXANDRUS FULVICORNIS, n. sp. — *Elongato-ellipticus*, *nigerrimus*, *politus*, suprâ *iridescens*, antennis, labro, palpis, tarsisque piceo-fulvis, pedibus piceis; thorace elytris angustiori, sub-quadrato, postice paululum angustato, angulis posticis prominulis, sub-rectis, suprâ basi utrinque foveâ elongatâ, profundâ, grosse punctatâ impresso, juxta angulos posticos impunctato; elytris punctulato-striatis, interstitiis sub-planis, apicem versus angustis, convexis.

Long. $4\frac{1}{2}$ lin. ♂.

The elytra in this species are rather less deeply-striated, but the striæ are punctulated as in *L. politissimus*, the striæ becoming much deeper and the interstices more convex towards the apex.

Ega.

LOXANDRUS XANTHOPUS, n. sp. — *Minor*, *elongato-oblongus*, *piceo niger*, *sub-iridescens*, labro, palpis, antennarum basi, pedibusque testaceo-flavis; thorace elytris multo angustiori, antice rotundato-dilatato, postice sinuato-angustato, angulis posticis prominulis, rectis, marginibus reflexis rufo-piceis, suprâ basi utrinque foveâ elongatâ, profundâ, intus plagiatim punctata, impresso; elytris profunde simpliciter striatis; subtus metasterno solùm grosse sparsim punctato.

Long. $3-3\frac{3}{4}$ lin. ♂ ♀.

Differs from all the preceding species in its less elliptical and more oblong general form, and in its pitchy colour, with the flattened reflexed margins of the thorax, and the suture of its elytra behind more or less pallid-piceous. The thorax is very distinctly narrowed behind, and sinuated before the hind angles, which are prominent and pointed. The punctures at the base of the thorax are confined to a patch on the inner side and at the bottom of the deeply sulcated fovea.

Generally distributed throughout the Amazons, and common.

Kentish Town: September, 1871.

Occurrence in Britain of Hylastes hederæ, Schmidt.—To this species must be attributed the insect, of the œconomy of which an interesting account was published by my friend Dr. T. Algernon Chapman, at p. 199 of vol. v of this Magazine, under the name of *Hylurgus pilosus*. I am personally responsible for the error in the name, for which I can only account by the fact that all the few British (supposed) types of *H. pilosus* seen by me are also to be referred to Schmidt's species above mentioned: I have, indeed, only recently seen the true *H. pilosus* of Ratzeburg, of which Mr. R. Lawson has sent me a few specimens, taken by him under the impression that they were *Polygraphus pubescens* (which they considerably resemble), under fir-bark, near Scarborough, about a month ago. We, therefore, include both species on our list; and, as will be seen, two genera not before recorded as British must apparently be used for their reception. These are *Cissophagus* (*script. Kissophagus*) and *Xylechinus*, recently characterised by Chapuis, at pp. 34 and 36 of his "Synopsis des Scolytides." In *Cissophagus*, formed for the reception of *H. hederæ*, Schmidt (*Ent. fragm.*, Stettin. *Ent. Zeit.*, iv, p. 103), the funiculus of the antennæ is six-jointed, the third joint of the tarsi is distinctly bi-lobed, and the mentum is rotundate-ovate at the base; whereas in *Xylechinus*, which includes only *H. pilosus*, Ratz. (*Forstins.*, Käf., p. 178, T. vii, 4),—removed by Chapuis from *Carphoborus*, Eichhoff (not *Carpoborus*, as De Marseul spells it),—the funiculus is only five-jointed, the third joint of the tarsi is simply cordate, and the mentum is cordiform. Other characters are pointed out by the author, but these are sufficient for the present purpose. Schmidt, in describing his *H. hederæ*, describes it as having a seven-jointed funiculus, but he evidently includes the scape in that term; and Redtenbacher and Thomson erroneously attribute six joints to the funiculus of *pilosus* (Bach, *Käferfauna*, ii, p. 144, however, gives the right number). Thomson also departs from his usual accuracy in stating the tibiæ of *pilosus* to be armed with "*denticulis pluribus*;" they are triangularly dilated, and armed at the apex with usually only two (rarely three) large recurved teeth, and there is only an indication of one other denticle at some little distance above these. In *hederæ*, the tibiæ are less triangularly dilated, having about six denticles in the lower half. The antennæ are stouter and shorter in *pilosus*, with very short and broad funicular joints, which are almost merged in the club, and a very stout and short scape. Compared as simply species, *C. hederæ* is lighter in color, not quite so elongate, and having the elytra more abruptly rounded behind; its thorax is shorter, broader, slightly constricted before the apex, and clothed with broader, squamiform, depressed pubescence, which does not form so evident a dorsal ridge as in *pilosus*; the individual punctures of the striæ of its elytra are more cleanly defined, and the erect setæ on the interstices are much stouter and longer, the squamiform pubescence also being thicker. In *X. pilosus*, moreover, the suture is more or less evidently clothed with greyish pubescence, and the whole insect resembles one of the smaller true *Hylastes*, such as *H. obscurus* (two continental types of which are labelled *H. hederæ* in the national collection).—E. C. RYE, 10, Lower Park Field, Putney, S.W., September, 1871.

Note on Geotrupes stercorarius, Linn.—Thomson (*Skand. Col.*, x, p. 330) refers *putridarius*, Esch., Er., to this species as a synonym, and re-names the *stercorarius* of Erichson (*nec* Linn.) *mesoleius*, from a new character which he has recorded for it, in the freedom from pubescence of the middle of its abdominal segments (a cha-

racter which it may be remembered has been used also by Dr. Sharp in defining the distinctions of *G. vernalis* and *G. pyrenaicus*). The chief comparative characters for the two species are as follows:—

G. stercorarius: elytra with the striæ not so well defined, and not quite so closely punctured, and with the interstices slightly convex; mandibles externally with only one slightly undulated emargination before the apex; apical teeth of the anterior tibiæ in ♀ not so large or sharp; segments of the abdomen equally pilose beneath. I have observed that, in a series, this species is the brighter of the two.

In the ♂ (in which, as usual, the thorax is larger than in the ♀) the posterior femora have a small, sharp tubercle near the base, beneath, on the hinder margin; the hind trochanters are produced to a point; and the front tibiæ beneath have a simple keel running near the front margin.

G. mesoleius: striæ of elytra better defined (though those between shoulder and suture are, as a rule, not so widely impressed at the base), more closely and cleanly punctured, with flatter interstices; the thorax often punctulate; each of the mandibles externally with two sinuous emarginations; apical teeth of front tibiæ in ♀ sharper and longer; segments of the abdomen almost hairless in the middle beneath.

In the ♂ the tubercle at the base of the posterior femora becomes a strong and almost hooked tooth, and the hinder trochanters are produced into a hook at the apex; the keel of the front tibiæ also is more medial, and is tuberculate at the base.

The species seem equally common here. I have very small varieties of *mesoleius*.—ID.

Weevil-galls on Linaria vulgaris.—Early in August last, Mr. C. G. Barrett found at Brandon, in Suffolk, several clusters of galls on the roots of the yellow toad-flax. The plant was growing on a light, sandy soil, and the galls were an inch or two below the surface. They are about the size of small peas, monothalamous, of a yellowish-white color, generally growing in clusters, two contiguous galls frequently becoming confluent. Out of several galls I cut open on August 26th, two contained white larvæ, and ten others perfect insects, the latter varying in color (according to the length of time since they had assumed their perfect state). The name of the weevil (for which I am indebted to Mr. Rye) is *Gymnetron linariæ*, Panz., the larva of which, according to Kirby and Spence, is said by Hamerschmidt to reside in galls on this plant. I have seen this gall before, but I do not remember from what locality I received it.—H. W. KIDD, Godalming, August 29th, 1871.

[The œconomy of this species is mentioned by Gyllenhal, Schnizlein, Panzer, Bach, Kaltenbach, and Brisout; and has quite recently been fully discussed by Ruptersberger, in the last vol. (xx) of the Verhandl. Zool. bot. Gesellsch., Wien, p. 839. Perris (L'Abeille, vii, p. 36), noticing Kaltenbach's statement that the allied *G. antirrhini* (not yet found in this country) also lives on *Linaria vulgaris*, states that the species now usually known by that name lives in the capsules of different species of *Verbascum* (especially *V. phlomoides*). He considers that Paykull's original statement of the habitat is wrong, or that the modern *G. antirrhini* is erroneously named. If it be rightly named, the difference in œconomy of two closely allied species seems remarkable.—E. C. R.]

Nematus Vallisnerii, Hartig, ovipositing under difficulties.—It would hardly be worth while to mention that I noticed a ♀ of this common species deposit her eggs into the extremity of a succulent young shoot of *Salix fragilis*, at 11 o'clock a.m., on the 28th May last, were it not that the act took place under unusual conditions. The extremity of the shoot in question was formed by the normal incipient wrapped-up bunch of silky and tender leaflets; but the whole bunch was so closely beset with a cluster of apterous green *Aphidæ*, with white longitudinal stripes, that it astonished me to see the saw-fly select it. I watched her as she came leisurely crawling over the live studding of the shoot, probing with her antennæ the few interstices. Vexed at the tickling caused by the feet of the intruder, the *Aphidæ* took to their usual means of defence—jerking their bodies, and freely discharging their liquid,—they behaved as if some ally of *Allothia victrix* had come amongst them for a sinister purpose. But my little innocent friend was not to be scared away by such unfriendly demonstrations. I saw her raise herself stiffly on her legs, standing on the living and moving pavement, and slowly drive her saw home into the tissue of the bunch of leaflets below. Gradually her body approached nearer to those of the *Aphidæ* around, and at last its pressure crowded them out of their positions, until I could see the tip of her abdomen rest on the surface of the bunch of leaflets, while her deflexed limbs still kept their hold on the bodies of her neighbours, which were all this time doing their best to get rid of her. For a quarter of an hour she remained in this apparently uncomfortable position, then she gradually raised herself up on her living cushions, and when the saw was fully withdrawn, she crawled away from the cluster of spiteful suckers, and halting at a clear spot on the twig, she went through a thorough process of cleansing: first the fore feet brushed her antennæ repeatedly, then the third pair was drawn over the wings to remove the sticky liquid squirted over them, then the legs themselves were subjected to the same treatment. At last I thought she was really too fond of her toilette, so my rude fingers closed upon her, and, indoors, I just made sure it was the well-known *Nematus Vallisnerii*, before I set her free again. Another point I have ascertained by this observation is, that the eggs are all laid in one batch, into different leaflets of the leading shoot, before they expand and grow apart; and that the subsequent appearance of rows of galls on different leaves of the same twig, is, therefore, the result of one operation.—ALBERT MÜLLER, South Norwood, S.E., August 19th, 1871.

Is the 'instinct' of bees ever at fault?—In reply to Mr. McLachlan's note on this subject, in your last number, "would he be surprised to hear" that the country bee-keepers near here say that bees are blind to things close to them, and consequently have to take aim from a distance when flying to any particular object? If this theory be correct, the apparently strange conduct of the *Osmia*, noticed by Mr. McLachlan, may have been caused neither by "too potent libations of nectar" nor by "a fault of instinct," as he suggests, but merely by the defective vision of the insect in question.—A. E. HUDD, Bristol, September, 1871.

[Admitting the country bee-keepers to be right, would it be sound to argue on *Osmia* from *Apis*? But any one who has seen a hive-bee flying straight from one to another flower on the same branch, must disbelieve the idea of defective vision in that insect.—EDS.]

Notes on British Hemiptera.—In a recent expedition to Cornwall and Devonshire I found specimens of the following two species of *Hemiptera*, which may be worth recording in your Magazine :—

Cydnus nigrinus, Fab. (*Æthus lævis*, D. and S.) tolerably plentiful under *Erodium* and stones, in the north-western part of Whitsand Bay, the locality where it was found some years ago by Mr. Dale. I have carefully compared the specimens I took with continental ones of *nigrinus*, and find that the only difference discernible is a rather greater convexity in those from Cornwall. Both foreign and English specimens appear to be very variable, especially in the punctuation of the thorax, but the spots of the membrane are almost identical in both. I mention this, as it is one of the characters given by Messrs. Douglas and Scott to distinguish *nigrinus* and *lævis*. The question of the generic name to be used is, no doubt, a difficult one; but the fact that Fabricius begins his genus *Cydnus* with two species of what is called *Æthus* by Mr. Dallas, tends to show that he had *Æthus* in his mind rather than *Brachypelta*, for which genus Mr. Dallas retains the Fabrician name. Besides this, *Brachypelta* has the apical margin of the corium curved, and in this respect it stands alone in the genus *Cydnus*, as employed by Fabricius.

Dieuches luscus: I found this pretty insect in three localities, four specimens among stones, by the side of a little stream in Kynance Cove, near the Lizard, one larva in Whitsand Bay, with the *Cydnus*, and seven specimens at the roots of grass, &c., near Teignmouth, Devonshire; in the last locality I found a pair of *Henestaris laticeps*.—EDWARD SAUNDERS, Hillfield, Reigate, 13th September, 1871.

Note on Crambus alpinellus, Hübner, a species new to Britain.—My friend, Mr. Howard Vaughan, has just shown me two examples of *Crambus alpinellus*, which were taken by Mr. Moncreaff at Southsea; these agree perfectly with specimens of the insect in my collection, received some years ago from Professor Zeller.

Alpinellus (which, I presume, was named on the principle of "*lucus a non lucendo*," since Zeller remarks "*in alpinibus nunquam inventus est*") is most nearly related to our *cerusellus*, though it is not in the least like that pygmy. It may be described as, for a *Crambus*, Phoxopterygiform; of an ashy brown colour, with a white, longitudinal, middle streak. This streak sends out a branch towards the inner margin before the middle of the wing; beyond the middle it is intersected by an obliquely placed mark of the ground colour; towards the apical margin there is a strongly angulated zig-zag line.

The species inhabits sandy, grassy spots, especially in fir woods. It is on the wing in July and August.

I am informed that this very distinct *Crambus* had been returned to Mr. Moncreaff as *geniculeus*. Staudinger, very properly, places about 70 species between them, and Zeller at least a hundred.—H. G. KNAGGS, Kentish Town, 12th September, 1871.

Vanessa Antiopa near Norwich.—On the 29th of August, about nine miles from Norwich, I saw a specimen of *Vanessa Antiopa* seated on the bole of a *Cossus*-eaten alder tree, and feeding on the sap exuding from the burrows, but it flew away swiftly on my attempting to approach it, and did not return that day.

As the insect was sitting with its wings extended, so as to give me an excellent view of it, there could be no mistake as to the species.—F. D. WHEELER, Chester Place, St. Giles' Road, Norwich.

Pieris Daplidice and *Deiopeia pulchella* near Brighton.—A large specimen of *P. Daplidice* was caught at Bevingdean, near Brighton, on the 27th August last. The insect is in good condition, with the exception of a slight chip on the hind margin of one of the fore-wings.

On Monday last, a ♀ specimen of *D. pulchella* was taken in a stubble-field near the Brighton Race Course, and was brought to me alive, a few hours afterwards, by its fortunate captor. I have had the pleasure of adding both insects to my collection.—H. Goss, Brighton, *September 16th, 1871.*

Deiopeia pulchella at Hove and Brighton.—On the 4th, about 10.15 a.m., I was fortunate enough to take a very fine specimen of *D. pulchella*, in a stubble-field, in Hove.

On the 11th a somewhat worn specimen was taken about 3 o'clock, p.m., on the Race Hill, by Mr. Gorringe, of Richmond Buildings, who showed it to me alive last night.—T. W. WOLFORD, Hon. Sec. Brighton and Sussex Nat. Hist. Society, 38, Buckingham Place, Brighton, *September 12th, 1871.*

Deiopeia pulchella near Erith.—A fine specimen of *Deiopeia pulchella* was taken on Monday last by a little girl, and brought to me before its wings had quite stiffened. It was caught in a field close to my house.—J. G. WOOD, Belvedere, S.E., *September 16th, 1871.*

Deiopeia pulchella at Bournemouth.—This morning I saw a *Deiopeia pulchella* flying briskly in the sunshine. It settled for a minute near to me, so that I saw it distinctly, then arose and flew over the steep cliff, where I could not pursue it, and, indeed, I had little chance of capturing it with a sweeping-net.—J. W. DOUGLAS, Bournemouth, *11th September, 1871.*

Deiopeia pulchella near Bristol.—A male specimen of this rare insect, in very good condition, was taken on the 10th inst. by my mother, in a garden at Bishopston, near Bristol.—J. B. JARVIS, Hill Cottage, Brixton Hill, S.W., *20th Sept., 1871.*

Deiopeia pulchella near Manchester.—I possess a female of this rare insect, in good condition, captured on the 8th inst., in the Railway Coal-yard at Middleton Station, by a workman, who boxed it from mere curiosity, attracted by its beauty.—JOHN THORPE, Church Street, Middleton, Manchester, *19th Sept., 1871.*

Leucania albipuncta near Exeter.—On the 23rd of August I captured at sugar, in my orchard, a very perfect specimen of *Leucania albipuncta*. Its ally, *lithargyria*, is a very common insect with me, and I had this season closely examined a great many of them before the former made its appearance. The clean, white spot on the wings immediately attracted my attention, and this, together with the smaller size, and darker upper-wings, unmistakably distinguishes it from *lithargyria*; in other points also it quite corresponds with Guenée's description.—H. D'ORVILLE, Alphington, near Exeter, *September 11th, 1871.*

Sphinx convolvuli near Exeter.—I last night captured *S. convolvuli* at my Petunia bed.—ID.

Sphinx convolvuli at South Shields.—I received from a friend a large specimen of this noble moth, which was found floating in the Tyne near the Mill Dam landing. The insect was very lively when it reached me, but is unfit for the cabinet in consequence of having been handled.—CHRIST. EALES, Grace Street, Catherine Street, South Shields, *September 13th, 1871.*

Larvæ of Deilephila galii, &c., at Brighton.—I have been so fortunate as to take 18 larvæ of *D. galii*, and 70 of *C. porcellus* near here this season. Those of *Acherontia Atropos* are also common.—W. EDWARDS, 18, Bosses Gardens, Brighton, 19th August, 1871.

Singular variety of Argynnis Aglaia.—While on an excursion upon the Norfolk Broads, during the latter part of last July, I found *Argynnis Aglaia* abundantly in one small marshy field, flying about thistle-heads, &c., and am informed by the "natives" that it occurs there every year.

I have recorded this both because *Aglaia* is of exceedingly rare occurrence in Norfolk—if, indeed, it be recorded from that county at all,—and because among the captures is a var. so distinct and beautiful as to deserve special notice.

On the upper-side nearly all the usual markings are obliterated, with the exception of those which cross the discoidal cell, of which the double bar, or irregular oblong ring, nearest the base, is present, as is the broad bar nearest the hind margin, but not the narrow mark, which, in *Aglaia*, crosses the cell between the other two. The two short, black bars or square blotches in the central area of the fore-wing of *Aglaia*, immediately below the discoidal cell, are faintly indicated; the series of round spots, crossing both fore and hind-wings, parallel to hind margin, is represented in the fore-wing by a row of obscure, cloudy blotches, forming a faint brown fascia: on the hind-wing two of the spots are visible near the anal angle, the others are absorbed in a broad, deep-black fascia crossing the (hind) wing, parallel to hind margin. Inside this fascia is the fulvous ground colour, marked with a distinct and broad, but irregular, black ring, instead of the black clouding which occupies the base of the hind-wings of *Aglaia*.

All the nervures (or wing rays) are conspicuously powdered with black, so as to form a series of black streaks bordering the hind margin of all the wings, where the ordinary lunules are entirely absent.

These streaks are especially distinct toward the apical angle of the fore-wings, and on the hind-wings, where they extend from the black fascia to the hind margin.

The general appearance is that the basal and central markings are absent, or almost imperceptible, while those of the hind margin are enormously exaggerated and extended toward the centre.

The under-side agrees far more nearly with Haworth's var. *Charlotta* than with *Aglaia*; the large, basal, silvery blotches of that var. are present, but the central row of silver markings is represented only by four small spots, while the apical row is extended into a series of seven large, oval spots, about half the size of the basal blotches.—F. D. WHEELER, Chester Place, St. Giles' Road, Norwich, Aug., 1871.

Capture of Noctua sobrina and other Lepidoptera at Rannoch.—My brother and I visited this most productive hunting ground again this summer, about the middle of August, and had the pleasure of taking another specimen of *N. sobrina*, together with the following rather local species:—

E. Blandina, *C. Davus*, *D. obfuscata*, *T. pinetaria*, *L. olivata*, *M. rubiginata* (var. *plumbata*), *C. munitata*, *C. testata*, *C. populata*, *C. imbutata*, *X. rurea*, (var. *combusta*), *C. graminis*, *C. Haworthii*, *A. porphyrea*, *N. glareosa*, *N. conflua*, *N. Dahlii*, *N. neglecta*, *O. suspecta*, *E. viminalis*, *A. occulta*, *A. tincta*, *H. adusta*, *C. solidaginis*, *P. interrogationis*, *S. anomala*, *A. alpinalis*, *C. margaritellus*.

I may also mention that from some larvæ taken last year about Camachgouran, I have reared, amongst other common species, one of each of the following : *T. cratægi*, *S. illustraria*, and *F. conspicuata*.—THOMAS HUTCHINSON, Grantsfield, Leominster, 9th September, 1871.

Captures of Lepidoptera at Rannoch.—During my stay of six months at the above locality I managed to take *Dasydia obfuscata*, *Psodos trepidaria*, *Cidaria reticulata*, *Fidonia pinetaria*, *Coremia munitata*, *Noctua sobrina*, *Tæniocampa gothicina*, *Aplecta occulta*, *Hadena rectilinea*, *Anorta melanopa*, *Scopula alpinalis*, *Scoparia alpina*, *Crambus ericellus*, *C. myellus*, *S. irriguana*, and many other, all of which have been handed over to Mr. E. G. Meek, who employed me to collect.—J. WARINGTON, September 11th, 1871.

Notes on the Lepidoptera of South Wales.—As very little appears to be known about the *Lepidoptera* of South Wales, notes on some of the species noticed, during a few days' visit in the middle of June, this year, may interest the readers of the E. M. M. For obvious reasons I have not mentioned the exact localities; but all the species named in my list were taken in sub-province 16 of Mr. Jenner Fust's paper on "Distribution," though many of them have not been previously recorded from that district. It will be seen that some rather good things have "turned up."

L. Acis: of this rare species I was fortunate in capturing six specimens, four of which were in first-rate condition. I kept one pair on the chance of obtaining ova, but did not succeed.

The male is a handsome insect on the wing, somewhat resembling a blue var. of the female *Alevis*, though it is more richly coloured; but I do not think anyone, after once seeing it on the wing, would let *Acis* pass unrecognised. It is extremely local, and I do not wonder at its not having been oftener met with. If once its few remaining localities be known, I am afraid it will very soon become extinct. The cause of its rarity in this country is, I have no doubt, to be found in the fact that the ova and young larvæ are destroyed by the haymakers.

Zygena lonicere and *jilipendulæ*, *Lithosia mesomella*, *Ephyra porata*, *punctaria*, and one fine ♀ *orbicularia*, *Macaria notata* and *alternata* (one fine specimen of the latter), *Lomaspilis marginata*, *Emmelesia affinitata* and *decolorata*, *Eupithecia castigata*, and *Euclidia glyphica*, all occurred on the wing, and of *Chesius obliquaria*, we took both larvæ and perfect insects at the same time and place.

Sugar did not produce much on the only evening I had a chance of trying it. *Miana furuncula*, *Grammesia trilinea* (var. *bilinea*), and *Rusina tenebrosa*, were the only *Noctuæ* that took the bait.

C. duplaris was not uncommon on the wing, but seemed to ignore the supper that we had prepared for it.

I returned home from my first entomological trip to Wales, very well satisfied with my captures. Should any enterprising collector chose to thoroughly work west and central Wales, he will, depend upon it, be rewarded by adding some interesting novelties to our lists. The country which has of late years produced *Xylina conformis* and *Eromene ocellæa*, must have other good things in store for future workers. What have become of *Mniophila cineraria* and *Valeria oleagina*, both of which are said to have been taken in Wales?—ALFRED E. HUDD, Stapleton Lodge, Bristol, 14th September, 1871.

Depressaria Douglasella bred.—When at Witherslack, at the middle of May, I found a fine grass-green larva feeding on the radical leaves of *Campanula rotundifolia*; it spun up in due course, and produced *Dep. Douglasella*.—J. B. HODGKINSON, 15, Spring Bank, Preston, August 6th, 1871.

[In the Entomologist's Annual for 1855, p. 52, we are informed that Mr. Boyd bred a specimen of this species from a larva found on one of the *Umbelliferae*.—EDS.]

Depressaria Weirella bred in plenty.—I have bred upwards of 200 of this species from larvæ collected on *Anthriscus sylvestris*: few collections seem to possess this insect.—ID.

Anarsia genistæ bred.—When at Morecambe, on the 30th of May, I collected a number of larvæ on *Genista tinctoria* (a plant which I had never examined at that season, though I have collected for 35 years). I am happy to say that I have been rewarded by breeding a dozen fine specimens of *Anarsia genistæ*.—ID.

Natural History of Xylina furcifera (conformis).—I have lately had the great gratification of rearing this rare British species from the egg, and have figured the larva at various periods of its growth. The eggs were obtained from moths captured in Wales by a kind friend, who generously shared his good luck with myself and others.

Six moths were captured in October, 1870, and were kept together in confinement through the winter, and towards the end of February, and the beginning of March, 1871, eggs were laid by one of the females; but the time of pairing was not observed.

The larvæ began to hatch on April 17th, the last of them appearing on the 30th. They fed on alder, *Alnus glutinosa*, and those that lived so long were full-grown from 11th to 17th of June; but a great many died off after their last moult, and I fancied that, in the case of the larvæ which I fed myself, this mishap was caused by the alder leaves being smothered with the secretion of the *Aphides*, which thickly swarmed on them. The pupa-state lasted till August; the first moth of which I have any record appearing on the 7th of that month, and the last on the 17th.

The egg is small for the size of the moth, globular in shape, the shell thin, with about thirty fine ribs, and irregularly reticulated between them; the colour, at first, a pale straw-yellow, afterwards a dingy pinkish, and lastly a dull purplish-brown, assimilating well with the rough specks on the alder bark.

The larva escapes by an irregular hole in the side of the egg, and at first is of a pale drab tint, and semi-translucent, with the alimentary canal showing as an internal green stripe. At first, and for three weeks of its life, it lives and feeds within the hollows between the ribs of the partially-expanded young alder leaves, by degrees, as it feeds and grows, becoming more opaque, and greenish in tint. When about a fortnight old, the colour is pellucid green, and distinct, whitish, longitudinal lines appear. In another week, the colour is a full, bright green, and the lines whitish-yellow. At the end of the month, the length attained is fully half-an-inch; the colouring now is at its brightest, the ground being a rich velvety full green, and the lines and tubercular dots bright sulphur-yellow. After this the growth is more rapid, and the colours become paler; when about three-quarters of an inch long,

the colour is olive-brown, and the lines and dots pale yellow, namely, a dorsal stripe of uniform width, a sub-dorsal stripe rather broader, a fine, wavy line between this and a narrow sub-spiracular line, the tubercular dots arranged in threes on either side the dorsal stripe. At the end of about six or seven weeks, the final moult occurs, when the larva is about an inch in length, and with this moult the ground-colour becomes olive-green, and there come some black markings, giving an effect very different from that of the former stages; and I may observe that it was just at this time that the great mortality occurred, the larvæ, which hitherto had seemed to be doing well, now dying off one after another.

When full-grown, the length is an inch and a half, the figure rather stout in proportion, and cylindrical, except that the head is a trifle narrower than the second segment, which, with the third, also tapers slightly forwards, and that the thirteenth is tapered to the end; the head is full and rounded at the sides; the tubercular dot furnished with very small, fine hairs; the skin smooth and velvety. The ground-colour is olive-brown, with a slight trace of green in it, particularly on the back, the sides and belly rather paler, having somewhat of a pinkish tinge; the pale yellow dorsal stripe is interrupted by a deep, blackish, freckled patch of the ground-colour, just at the beginning of each segment, which, by its extension backwards on either side, forms the dark boundary of more than half of a blunt diamond-shape of blackish freckles, the area within showing the yellow dorsal stripe but faintly, this dark freckling, with a deeper suffusion of ground-colour, forms a bar across the back from the hinder tubercular yellow dot on one side to that on the other, the part behind remaining to complete this irregular diamond-shape is but faintly freckled, and there, at the end of the segment, the pale yellow dorsal stripe, shows bright and unclouded; on all the segments, from the hinder tubercular dot, runs a thick black streak, a little downwards and forwards into the sub-dorsal pale yellow stripe, which it extinguishes at that part nearly up to the segmental division, or, in some instances, opens a little at one or at each end, so as to allow the yellow stripe to appear. The side, for about half way or more down, is rather paler than the back then comes a very fine, rather wavy, yellowish line, broken a little in character by black atoms that make its edges appear ragged; the thin sub-spiracular line is similar at a little distance below, the interval being a little deeper in colour than the side, and much freckled with deeper olive-brown; the belly and legs are rather paler and a little tinged with olive-pinkish, and bear some few freckles of yellow and olive, sprinkled just above the ventral legs, these last are tipped with pinkish-brown; the tubercular dots are all pale yellow, and distinct, and are delicately ringed with black, as are also the oval, dirty-whitish spiracles; the head is olive-brown, freckled and reticulated with darker brown; the slightly more shining second segment is, on the back, adorned with two pairs of yellow dots.

When the larva ceases to feed, its habit is to retire into moss, or, if it does not find this, it will fold up a leaf, or else fasten a leaf loosely to the surface of the soil, and there spin an oval cocoon, three-quarters of an inch long, of whitish silk, close, but semi-transparent, and closely adhering to the surrounding substances.

The pupa has no striking peculiarity, being thick in proportion, a little over five-eighths of an inch long; the thorax, wing, leg, and antennæ cases finely corrugated, and the abdominal segments rather smooth, terminating in a hooked

point, by which it is firmly attached to one end of the cocoon; its colour dark brown, the incisions of the segments brownish-red, and the whole surface shining.—WM. BUCKLER, Emsworth, *September 11th, 1871.*

Natural history of Aspilates gilvaria.—I owe to the kindness of Mr. A. H. Jones the supply of eggs, which enabled me to follow out the transformations of this species, after previous failures. On several former occasions I had reared larvæ to half-growth, and then lost them, for want, as I supposed, of knowing the right food to give them; and now, after this more successful attempt, I am still unable to speak with certainty about the food, whether there is any one plant to which the larva is more attached than to any others.

I received the eggs on August 31st, 1869; larvæ hatched on Sept. 12th: they attained a length of not quite $\frac{1}{2}$ inch before hybernation, having fed on *Thymus serpyllum*, *Achillea millefolium*, *Potentilla reptans*, and *Medicago lupulina*. I kept them outdoors, and on Christmas eve, as I was moving their flowerpot, a large one 10 inches across and full of earth, to an open shed, I let it fall from a height of about three feet to the ground, where it broke to pieces, and its contents, earth and the plants on which the larvæ had fed, lay scattered over about a square yard of the gravel path. Luckily I did not lose my temper, but—Mark Tapley-like, feeling quite jolly under the circumstances—I quietly got together all the earth and plants, sweeping the path clean with a soft brush; and bringing all the mixture indoors, I spread it thinly over two large newspapers on the floor of my room; I next scattered a handful or two of blades of grass over the surface, arranged a cordon of grass all round the edges, and then left things to settle down. In the course of the evening, some three or four hours after, I got away from the Christmas family party, and lighting a short candle, lay down on the floor of my room, to examine the blades of grass; and in this way, much to my delight, I recovered 12 *gilvaria* out of about 15, besides all 4 larvæ of *Gnophos obscurata*, which had shared their food and fortunes. I now re-planted their food in another pot, and turned them on to it again, apparently none the worse for their adventure. However, in the early spring many of them died off, and I was afraid I should once more have to record a failure, but, fortunately, when the pining sickness had done its worst, there remained 3 larvæ in good health; these began to feed again, and now chose, and finally fed up on, *Veronica serpyllifolia*, a plant or two of which had by chance grown up in their flowerpot; but for a long time they made little growth, for on May 14th, 1870, I find it noted that they were still very small; after that date the growth was more rapid, and in June they moulted; about the end of June they moulted again for the last time, and during July fed up to full growth; early in August they changed to pupæ, and the first moth came out on August 19th.

The egg of *gilvaria*, like those of others of the genus, is long brick-shaped, not ribbed, but pitted in rows from end to end, the little pits being irregular in size; the colour at first yellowish-green, afterwards reddish. I have notes of two batches, in one of which the eggs were deposited touching one another end to end in a long string, but in the other somewhat *en échelon*, each egg overlapping about one-third of the length of its neighbour, as they were placed in a slanting row.

The newly-hatched larva is very pale brown on the back and belly with a dark brown sub-dorsal line, and a whitish stripe along the spiracles. When the larva is

about one-third of an inch long, its colour is for the most part pale ochreous, the back showing paler, with a fine dorsal line of brown; there is also a brown sub-dorsal line, followed at an interval by a broader purplish-brown stripe. After this, when the larva begins to grow, the ochreous tint becomes colder, and so continues till after the last moult.

When full grown, the length is about one and a quarter inches, the figure rather slender, cylindrical, being stoutest at the tenth segment, and thence tapering almost imperceptibly to the head, which is nearly as wide as the second segment, and is flattened and narrowed a little in front; anal flap ending in two short points, whilst from under it projects a pair of longer and more slender points, slightly curved inwards, and projecting quite one-sixteenth of an inch; the skin smooth, but transversely wrinkled on the hinder part of each segment, and along the spiracles; the larva, when handled, feels tough and stiff. Although the general colouring is pale ochreous, yet there are several lines and stripes to be distinguished, and the difficulty is to speak of these with sufficient clearness, and at the same time not give too strong an idea of them. The ground colour pale greyish-ochreous, with a pinkish tinge along the sides; a broad paler stripe down the back, having a brownish-dark line through its middle, most distinct on the front segments, and being edged with a fine brown line; a broad, pale, greyish-buff sub-dorsal stripe, beginning on the head, and continued to the extremity of the anal points, bordered above by a fine brown line; next a broad lateral stripe (or band) sprinkled closely with brown freckles, and bearing two fine pale lines, the lower of which is whitish throughout the four last segments, and on the hinder part of each of the others; then the pale, puffed, spiracular ridge bearing the reddish-yellow spiracles ringed with brown; under the ridge, just beneath each spiracle, is a longitudinal dark brown dash; belly greyish-ochreous with two faint dusky lines; the usual dots wide apart, blackish in colour; the lateral band ceases on the front of the thirteenth segment, leaving the anal flap and the long points pale.

One of my larvæ was rather darker than the others, with the ground of the back browner, and the lateral band formed of purplish-brown freckles and specks; but even the darkest looked cold-tinted and pale.

When at rest, the larva remains stretched out at full length, but curls up the front segments when disturbed, and, if further annoyed, drops from its food, and curls its whole body up tightly in the same plane, bringing the anal legs and flap tightly down on the inner coil, and in this position will allow itself to be trundled like a wheel. When about to change, it takes advantage of some small interstice between two bits of earth, or sticks or stones, and, spinning a few threads, draws some small, loose particles together to hide the opening. The pupa is long and slender; the head, wing cases, and last segment of the abdomen, are very dark, shining brown; the rest of the abdomen of a pale tint of warm red-brown, with spots and transverse streaks of the darker colour.—J. HELLINS, Exeter, *July*, 1871.

Success of the American Moth Trap.—About a fortnight ago I determined to give my "American Moth Trap" a trial, especially as I had at the time the pleasure of the company of my friend Mr. W. F. Wheeler, who was anxious to see how it worked.

Well, we concealed it in an alder copse till dark, while we collected and sugared, and when darkness came on we mounted the "trap" on a convenient stump, lighted and left it.

Till nine o'clock nothing came, but soon after, on looking, I found no less than six or seven *Phibalapteryx lignata* scampering up the inside glass. A few sharp puffs of breath drove these into the drawer where they were secured by the glass slide, and we again left it. Before the evening closed we trapped some more *lignata*, one *Pterophorus isolactylus*, and two or three common species, such as *Hydrocampa nymphalealis*, &c.—C. G. BARRETT, Norwich, September 16th, 1871.

Review.

TRANSACTIONS OF THE NORFOLK AND NORWICH NATURALIST'S SOCIETY, 1870-71, 8vo., pp. 1-92.—Norwich, 1871.

Last year we had the pleasure of noticing the first part of "Transactions" (vol. vii, p. 21) published by this flourishing local Society. The volume now before us contains matters of more than local interest. Though ornithology seems decidedly the strong point in the studies of the members, all branches of natural history are fairly represented. The entomological paper is by our valued correspondent Mr. Barrett, on coast insects found inland. Mr. Barrett's views on this subject are already known to the readers of this magazine. His observations are very valuable, but we think Mr. Barrett argues too much from local facts. Many of our coast insects are known to continental entomologists as inhabitants of the plains of central Germany, where they find the conditions which with us, in the majority of cases, apparently only exist on the shores. With reference to the President's remarks as to the existence of seals in the inland seas of Asia, we would remind him that marine *Crustacea* exist in some of the fresh-water lakes of Norway, identical in species with those found on the shores, and only slightly modified by their long sojourn in fresh-water; and that, on the other hand, the mighty rivers of tropical Asia and tropical America are inhabited by many species of the smaller *Cetacea*, which carefully keep in the upper part of the rivers, away from the influence of the ocean. The existence of seals and dolphins inland is only surprising because both have become associated in our minds with marine conditions.

A paper of general interest is that by Prof. Alfred Newton, on a mode of keeping a Natural History Register, with lithographed specimen. It is, of course, the journal of an ornithologist, but combined with daily meteorological observations, too complicated for the entomologist; yet the latter might take some useful hints from it.

DESCRIPTION OF NEW SPECIES OF AFRICAN DIURNAL LEPIDOPTERA.

BY CHRISTOPHER WARD.

(Continued from page 82).

EURYPHENE PORPHYRION, n. s.

- ♂. *Upper-side*: fore-wing dark rufous-brown, with the base black, and inner margin marked with red, within the cell two large black spots, beyond the cell, an irregular line of black continued down to the inner margin, and beyond the

middle a small white spot ; a line of black following the outer margin. Hind-wing : base black and containing a red spot, centre of wing with a broad band of red ; outer margin dark rufous-brown, edged on the inner-side with black.

Under-side : light rufous-brown, with base and outer margin darker ; fore-wing with three spots in the cell bordered with black ; apex greyish-white, a black line following the outer margin : hind-wing with three spots near the base, bordered with black, a line of black following the outer margin, edged on the outer-side with grey, and on the inner-side with an indistinct band of grey spots.

♀ : resembles male, wings more elongated, the hind-wing more broadly marked with red, and the colors generally lighter.

Expanse, male, $2\frac{3}{10}$; female, 3 inches.

Habitat : Camaroons.

HARMA CYCLADES, n. s.

♂. *Upper-side* : both wings bright, light rufous-brown ; fore-wing, base rather darker, upper and outer margin narrowly edged with dark brown, within the outer margin a band of seven minute black spots. Hind-wing : base brown, a band of darker brown crossing vertically midway, darkest at the anal angle (this band is slightly continued into the fore-wing) ; outer margin brown, edged on the inner-side with a narrow, waved band of black.

Under-side : both wings tawny brown ; fore-wing with three spots of darker brown bordered with black, one within the cell, one below, and one beyond it : hind-wing with two similar spots near the base, a narrow line of darker brown following the outer margin ; both wings crossed midway with a narrow line of brown.

Expanse, 3 inches.

Habitat : Camaroons.

HARMA CAPELLA, n. s.

♂. *Upper-side* : fore-wing, light tawny-brown, base darker brown and slightly marked with waved lines of black ; outer margin brown, bordered on the inner-side with an irregular waved band of black ; within, a second band of brown lunular markings : hind-wing, light tawny-brown, base and inner margin broadly marked with brown, outer margin brown, with an inner band of black lunules ; a band of brown crossing vertically midway from anal angle to centre of wing, near the base several waved lines of black.

Under-side : light brown, both wings crossed vertically midway by a black line, with the outer-side darker brown, and on the inner-side spots of lighter brown bordered with black ; within the cell of fore-wing a spot bordered with black, below and beyond the cell a similar spot ; both wings with a sub-marginal band of small black spots.

Expanse, $2\frac{1}{2}$ inches.

Habitat : Camaroons.

HARMA CICERONIS, n. s.

♀. *Upper-side* : dark brown, both wings crossed midway by a white band, which

broadens inwardly at the anterior margin of fore-wing; outer margin of both wings with a band of white spots, edged inwardly with black lunule markings, within, a second band of white spots, lunular on the fore-wing, rounded on the hind-wing; cell of the fore-wing crossed with wavy lines of black.

Under-side: pale green, central band and white spots as above, but more indistinct; within the cell of fore-wing an oval spot bordered with black, below this a small circular spot, and near the base of hind-wing several indistinct spots bordered with black. Expanse, $2\frac{1}{2}$ inches.

Habitat: Camaroons.

Resembles *Harma Æmilus*, but quite distinct. Also in the collection of Mr. W. C. Hewitson.

HARMA CYRIADES, n. s.

Upper-side: yellowish-white; fore-wing, apex brown, outer margin bordered with brown, with small indistinct spots of white, and edged on the inner-side with darker brown: hind-wing, inner margin and anal angle broadly marked with brown, outer margin brown as on fore-wing, but with the white spots and inner band of dark brown more clearly defined.

Under-side: yellowish-white, both wings crossed midway with a line of brown, beyond the cell of fore-wing wavy lines of dark brown, within the cell an oval spot bordered with black, below, a small circular spot; near the base of hind-wing two small spots bordered with black. Expanse, 2 inches.

Habitat: Camaroons, and Cape Coast Castle.

CHARAXES HADRIANUS, n. s.

Upper-side: both wings white; fore-wing, base deep red, continued midway into the cell, apical half of wing black, beyond the cell two spots of white, and above these, near anterior margin, two smaller white spots, near the outer margin a curved band of five white spots, the two lowest the largest, a small white spot near the anal angle: hind-wing, base grey, outer margin edged with black, and on the inner-side a narrow band of seven elongated black spots, the upper one and the two lowest are the largest; two short black tails.

Under-side: white; fore-wing, base greyish-white, and apical half a lustrous-grey, a large oval spot of deep red near the anal angle: hind-wing crossed vertically midway by a red band, edged on the inner-side with black, outer margin with a band of small black spots. Expanse, $3\frac{1}{2}$ inches.

Habitat: Camaroons.

The colouring of this fine species is remarkable, as occurring in the African group of *Charaxes*. It resembles the Eastern types, as represented by *C. Delphis*, &c.

CHARAXES PAPHIANUS, n. s.

Upper-side: bright-rufous brown; fore-wing, apex and hinder margin black, two

black spots within the hinder margin, beyond the cell an oval spot bordered with black: hind-wing with one tail, this and the outer margin edged with brown, a line of small, black spots following the outer margin.

Under-side: pale lustrous-brown, both wings crossed diagonally with a narrow band of darker brown, edged on the inner-side with grey; within the cell of fore-wing two small spots bordered with brown; near the base and crossing the cell numerous lines of brown, edged with grey. Expanse, $2\frac{1}{4}$ inches.

Habitat: Camaroons.

PAPILIO ANDRONICUS, n. s.

♂. *Upper-side*: dark brown; fore-wing crossed diagonally to the end of the cell by a clear white band, broken by the nervures, deeply indented on both sides, and narrowing towards the apex; a white spot near the apex: hind-wing with a band of similar color, broader, not broken, and on the outer-side grey; outer margin of both wings slightly edged with white.

Under-side: fore-wing brown, darker within the cell and anterior margin: hind-wing rufous brown, base broadly marked with orange-red, nervures dark brown; a white band crossing both wings as on the upper-side, broader on the fore-wing, and narrower on the hind-wing. Expanse, $4\frac{1}{2}$ inches.

Habitat: Camaroons.

Allied to *Papilio Zenobius*; but differs in the straight margin of the white band crossing the hind-wing (especially on the under-side), the absence of any detached markings between the nervures near the base, and the much clearer white of the band.

NEPTIS BIAFRA, n. s.

♂. *Upper-side*: both wings brown-black; fore-wing, the cell crossed by three diagonal white marks, the outer one the largest, the inner one near the base the smallest; beyond the cell three parallel, horizontal, white streaks, the upper one the smallest, below, midway, two clear, oval, white spots: hind-wing, crossed midway by a broad band of white, this band is also continued slightly into the fore-wing; fringe of both wings white, following the outer margin of both wings four white bands, the first (from the margin) very narrow, second rather broader, third broad, especially on the hind-wing, fourth narrow and rather undulating on the hind-wing.

Under-side: resembles upper-side, with the white markings generally broader.

Expanse, $2\frac{3}{10}$ inches.

Habitat: Camaroons.

ATELLA MANORO, n. s.

♂. Wings angular. *Upper-side*: both wings bright rufous-brown, darkest at the base: fore-wing, outer margin and apex bordered with dark brown, continued round the anterior margin and narrowing towards the base; within the cell a small oval spot bordered with dark brown, at the extremity of the cell a dark brown patch; near the apex three small red spots placed as a triangle;

hind-wing with a similar marginal band, containing at the anal angle a narrow line of red; both wings with small brown spots on the inner-side of the marginal band.

Under-side: brown; fore-wing, the cell crossed by three elongated spots, the outer one red, edged with dark brown, the centre and inner one silvery-grey, edged with brown; beyond the cell and at the anal angle a patch of silver-grey; apex with a small spot of silver: hind-wing with a patch of silver-grey at the anal angle; both wings crossed diagonally by a line of silver, edged on the inner-side with dark brown; a narrow waved line of dark brown following the outer margin of both wings. Expanse, 2 inches.

Habitat: Madagascar.

EREBIA PASSANDAVA, n. s.

Upper-side: both wings deep purple-black, darkest round the outer margin.

Under-side: dark brown, rather lighter at the outer margin, which is edged by a narrow line of black; at the apex of fore-wing two ocelli nearly confluent, both black with white eye, the upper one very small; near anal angle of hind-wing a larger ocellus, black, edged with rufous-brown, and a small white eye, above this, following the outer margin, three minute ocelli, white, edged with black. Expanse, $1\frac{9}{10}$ inches.

Habitat: Madagascar.

MYCALESIS ANGANAVO, n. s.

Upper-side: brown; fore-wing with an ocellus midway near outer margin, black, bordered with red, and with a white eye: hind-wing with a small ocellus of similar colors near the anal angle; outer margin bordered with lighter brown, containing a narrow line of dark brown.

Under-side: brown, with numerous waved markings, outer margin broadly bordered with lighter brown; ocelli as on upper-side. Expanse, 2 inches.

Habitat: Madagascar.

Halifax: September, 1871.

ON THE EMBRYONIC LARVÆ OF BUTTERFLIES.

BY SAMUEL H. SCUDDER (OF BOSTON, U. S. A.).

In their papers on various species of British *Macro-Lepidoptera*, Messrs. Hellins and Buckler furnish us with much better accounts of the external appearance of caterpillars than can be gained from the meagre and superficial descriptions which used to be thought sufficient; and, as they have not confined their descriptions to the full grown animals, but have followed the creatures through all their moults, they have, in several cases, incidentally shown how great a difference there is between the larva just hatched and the full grown caterpillar; especially in the case of some of the *Rhopalocera* thus treated by them. Mr. Riley, of America, has, in one or two instances, recorded similar facts.

It is the purpose of the present communication to point out the probable universality of this law—that caterpillars of butterflies present greater structural differences between the embryonic and adult stages of the same individual, than are to be found in the adult larvæ of allied genera. By the term “embryonic,” I designate those caterpillars which have not changed their condition since leaving the egg, a stage in which they generally continue but one or two days. Some of the changes alluded to are more or less gradual in their appearance, but they generally occur at the first moulting of the caterpillar.

All the instances given are drawn from New England butterflies, and the generic terms employed are those used in my list, published in the Proceedings of the Boston Society of Natural History. If any one is sceptical in regard to the facts adduced, I can enter more into detail upon doubtful points. It should also be premised, that in studying caterpillars, the shape and sculpturing of the head, the form of certain segments, and especially the precise number, location and disposition of the spines, thorns, and hair-emitting warts of the body, will be found to furnish abundant means of distinguishing the most closely allied and minutely sub-divided genera. But to our examples.

In the genus *Satyrus*, the body of the young larva is furnished with exceedingly long, scarcely tapering, compressed hairs, geniculate a little beyond the base, serrulate above, and generally directed backwards; those, however, which occur on the upper portion of the thoracic segments are directed forward, and thus present a very peculiar contrast. Nothing of this sort appears on the mature larva, which is represented by Boisduval and Le Conte as quite smooth, but which is probably uniformly clothed with very short hairs.

In the genus *Hipparchia*, the young larva is born with a head of equal height and breadth, furnished with prominent lateral and frontal warts. The body has four pairs of longitudinal rows of tubercles definitely disposed, each tubercle bearing a short, straight, delicately clubbed bristle. The head of the mature larva, on the other hand, bears no lateral or frontal warts, but either half is prolonged upwards into a conical horn as long as the head itself; while the body is furnished only with microscopic hairs, irregularly distributed. In both this and *Satyrus* the bifurcation of the last segment of the mature larva, long known as a characteristic of the sub-family of *Satyrinae*, is scarcely perceptible in the embryonic caterpillar, being indicated in *Satyrus* only by slight tubercles.

In *Limenitis*, the head of the young larva is smooth and equal, and the body uniform in size throughout, studded with numerous equal,

stellate, regularly disposed warts. In the mature larva the head is covered with numerous conical warts, and surmounted by a pair of very large compound spinous tubercles. The body is by no means uniform, the second and third thoracic and eighth abdominal segments being "hunched" and tumid, while the first thoracic segment is much smaller than any of the others; the warts have changed to very variable tubercles—on the second thoracic segment into a long, club-like, spinous appendage,—and are mounted on mammulæ of different sizes; the whole, aided by the strange coloration of the animal, presenting a most grotesque appearance.

In the young larva of *Grapta*, the head is smooth, and the body furnished with three pairs of rows of minute warts, each emitting a long tapering hair. In the mature larva, the head is crowned by a pair of long, stout, aculiferous spines; and the body bears seven longitudinal rows of mammiform elevations, each surmounted by a compound spine. That these spines are not simply the out-growth of the hairs of the immature caterpillar is evident from the fact that there is a median dorsal row which is entirely wanting at birth, and that the position of the other spines, relatively to the sides of the segments upon which they occur, is quite different from that of the hairs in the young animal.

The same statement, with generic modifications, may be made of *Vanessa* and *Pyrameis*.

In the genus *Argynnis*—or, rather, in that section which has been rightly separated from it under the name of *Brenthis*,—the head of the young larva is much broader than high, and the body profusely furnished with conical warts, arranged, to a certain extent, in clusters, which are in eight longitudinal rows, continuous on the thoracic and abdominal segments, each wart emitting a very long, tapering, spiculiferous hair, expanding into a delicate cup-shaped club at the tip. In the mature larva, the head is equally broad and high, and the body furnished with six longitudinal rows of simple, not clustered, mammulæ, differently disposed on the thoracic and abdominal segments, each mammula bearing a stout, fleshy, conical, bluntly tipped, aculiferous process.

In *Melitæa*, the head of the immature and adult larva scarcely differ. In the younger stages, the body is equal, excepting that the posterior half tapers slightly; in the older period it is also nearly equal, but tapers forward a little on the thoracic segments. Besides this, we find differences similar to, but even greater than, those referred to in *Grapta*. In the embryonic larva, the body is furnished with small warts, giving rise to rather short, tapering hairs, all arranged in five

pairs of rows, three of them above, one on a line with, and one below, the spiracles. In the mature form, the hairs have given place to stout tapering spines, each supplied with many aculiferous, conical wartlets, and arranged in a median dorsal series and four pairs of lateral rows, two above and two below the spiracles.

If we next turn our attention to the *Lycanidæ*, we shall find similar differences. While the form of the head and body remain nearly the same from youth to maturity, the contrasts between the dorsal and lateral surfaces of the body are more pronounced in the early stage, both from the greater flattening of the upper field, and from the presence, at the line of demarcation between the two, of a series of warts, emitting hairs, some of which are exceedingly long, and curve backwards; similar hair-bearing warts are present along the fold dividing the lateral and the ventral regions, while there are one or more longitudinal rows of simple warts along the sides. The different groups, the *Theclæ*, *Lycænæ*, and *Chrysophani*, can be distinguished by the number of warts to a segment in each of the first-mentioned rows, and by the character of the hairs borne by them. In the full-grown larva, the linear series of warts are wanting, but the whole body is covered with microscopic hairs, seated, in *Lycæna*, on stellate dots, and which are only slightly, if at all, longer upon the angles of the body.

In the *Papilionidæ*, again, we find no differences of importance in the shape of the head, but some peculiar features in the armature and form of the body. In *Colias*, the embryonic animal is furnished with four rows of peculiar appendages on either side of the body, three rows above the spiracles, each bearing one appendage to a segment, and one beneath them bearing two appendages to a segment; these appendages are short, fleshy papillæ, expanding from a slender base to a club-shaped apex, as broad at its tip as the entire length. In the mature larva, all this is wanting, but the body is profusely clothed with minute short hairs, seated on regularly-disposed delicate warts.

Pieris is similar; the young larva is furnished with long, hair-like appendages, tapering slightly, but at the tip expanding into a delicate club, and disposed much as in *Colias*. In the mature larva, the body is furnished with two sets of minute warts, one arranged in regular transverse series and hairless, the other irregularly distributed and emitting each a short delicate hair.

In *Papilio*, the body of the infantine caterpillar is invariably more or less angulated, like that of the young *Lycænid*; while, at maturity, it is always quite regularly rounded above the spiracles. It is furnished, when young, with several longitudinal rows of bristle-bearing tubercles, one tubercle to a segment in each row, one row in the middle of the side more conspicuous than the others. When full grown, the body is

almost entirely naked in the species I have examined, being supplied only with smooth, hairless, scarcely elevated, lenticular warts, or with irregularly distributed very minute wartlets, bearing inconspicuous hairs. In other species there are long, fleshy filaments upon the sides of the mature caterpillar, but I have not seen the embryonic stage. In addition, the first segment is supplied with an osmaterium, which is wanting in early life.

The *Hesperidæ* strongly remind us of the genus *Colias*; for we find the body of the embryonic larva supplied with rather short fungiform or infundibuliform appendages, disposed in rows upon the sides of the body, and arranged as in the *Pierinæ*; while in the full grown caterpillar, the body is furnished only with short downy hairs, irregularly and profusely scattered. This furnishes an additional proof, of which many others are not wanting, of the close affinity of the *Papilionidæ* and *Hesperidæ*.

We have thus passed in review most of the great groups of *Rhopalocera*,* and have substantiated, in a general way, the assertion made at the outset:—that there are greater structural differences between the embryonic and adult stages of the same individual than can be found in the adult larvæ of allied genera. Indeed, this statement is perhaps too feebly formulated, so important are many of the distinctions which have been traced. These differences, it should be noted, are not always in the same direction; for we have seen that caterpillars which in infancy are clothed with appendages of a unique and conspicuous character, definitely disposed, display, in mature life, irregularly distributed, scarcely perceptible warts, emitting simple and nearly microscopic hairs; while others, which in their earliest stage bore regular series of simple hairs, seated on little warts, become possessed, at maturity, of compound spines, surmounting mammulæ, also definitely arranged, but occupying a very different position to the hairs of early life. So, too, we find some caterpillars which bear a tuberculated, irregular head in infancy, and a smooth and equal one at maturity; or the reverse, where the head is simple at birth, and heavily spined or cornute when full grown; others, again, remain almost unchanged through life. This latter condition of uniformity never applies to the appendages of the body, whether we consider their character alone, or their disposition. Nor—the only other possible condition—do we ever find larvæ bearing only irregularly distributed, simple, minute hairs in infancy, and regularly arranged special appendages at maturity. Indeed, it is doubtful whether such a phenomenon exists in Nature; since in the numerous and varied groups that have been examined, special dermal appendages have been found to be an invariable characteristic of embryonic larvæ.

August, 1871.

* Mr. Riley finds similar changes in *Danaïs*.—S. H. S.

NOTE ON THE OVIPOSITION OF *LIBELLULA* (*SYMPETRUM*)
FLAVEOLA, LINNÉ.

BY ALBERT MÜLLER, F. L. S.

In recording the following observation, I have no wish to call for a controversy on disputed points, having neither the inclination nor the leisure for one. I confine myself to saying, that I have honestly striven to observe correctly, bearing in mind Réaumur's remark that "*les..... observateurs ne sont pas toujours assés en garde contre l'envie de deviner des faits, ni assés attentifs à faire distinguer ceux qu'ils ne rapportent qu'après les avoir vûs, de ceux qu'ils ont imaginés en grande partie*" (Mémoires, T. 6, p. 433).

On the 27th August last, between 11 and 1 o'clock, as I sat down on the edge of a very small, shallow pond, at the bottom of Shirley Heath, my attention was soon drawn to the doings of a large number of one species of dragon-fly, which my friend Mr. McLachlan, after examination of a pair taken by me *in copulâ*, pronounces to be *Libellula flaveola*, Linné. The sun was shining brightly at the time, and the heat was intense.

Leaving to their own games the bachelor males flirting with lonely spinsters, I soon perceived that more important proceedings were taking place on the pond.

One copulated pair after the other came sweeping down from the hills, and kept hovering over the pond. If I say "copulated," I mean *here*, that each male still kept its hold on the neck of the female with its anal claspers, thus almost completely controlling her actions. As each couple arrived, I saw them fly, joined together as described, several times across and around the ditch, as if to make sure that the coast was quite clear. They did not seem quite to like the broad brim of my "Leghorn," but, as that shading head-gear was carefully kept quite motionless, a slight curve in their course was the only indication of their feeling somewhat disconcerted; so, after hawking to and fro a few instants, without being disturbed, they settled down to "business."

Hovering steadily at about half a foot's distance above the water, I watched each male jerk his partner violently down to the level of the water, which impetuous movement caused a very distinct, sharp, rustling sound of their wings. Then, rapidly dragging his mate up again, the ♂ would just shift his position to a little distance and repeat the same "whipping" of his helpless partner. Each time the surface was beaten by one stroke, as shown by the single circular wave gradually spreading; and each time only the abdomen of the ♀ touched the water. Now, I knew a little of what had been written on this "ungentlemanly" behaviour, and I particularly recollected the expressive poetical passage

quoted in Kirby and Spence's Introduction, vol. iv, p. 568: "*sed tandem lacessitus aquas petit, quas sponsæ cauda longa, me (Réaumur) teste, sæpius flagellat, donec defatigata, et quasi ex frigido calorem concipiens, demum et sensim caudam inflectit, et se reddit amori.*"

But sober truth is sometimes stranger than fiction, says Dr. Hagen, in the "Revue des Odonates," pp. 344, 345, translating Professor von Siebold's observation from "Germer's Zeitschrift für die Entomologie," vol. ii, p. 437:—

"Chez la (*L.*) *scotica* la ponte est fort curieuse à étudier, attendu que le mâle seconde la femelle dans cette opération. Après l'accouplement il ne la quitte pas, et vole toujours en la tenant par le collier jusqu'à ce qu'ils aient rencontré un lieu convenable dans les eaux stagnantes; alors il imprime à son abdomen le mouvement oscillatoire, dont il a été question plus haut" (refers to a note on females *only* of *L. depressa* and *quadrimaculata*), "sans quitter la même place et sa femelle doit suivre ce mouvement que le mâle exécute de telle sorte, que chaque fois le bout de l'abdomen de la femelle trempe dans l'eau, et que les œufs qui ont dépassé la vulve passent soudainement dans l'élément propre à leur métamorphoses. Ayant examiné les places où les mâles avaient ainsi dirigé leur femelles, j'y ai trouvé des œufs en grande partie semés entre les plantes aquatiques."

As a child of the nineteenth century, it was my duty to try and show that we are ahead of the eighteenth; viz., that "flagellation" has given place to mild domestication, though without emancipation from maternal duties.

A large sheet of brown paper is usually part of my entomological outfit, and, in the present instance, its colour was most convenient, because it matched well with the clay bottom of the pond.

Soaking the paper carefully, I spread it out at the bottom, though it was a troublesome task to make level ground, as so many reeds, &c., were protruding; but at last the trap was sunk, and again I sought my rest on the bank. Down swooped a glittering pair, dancing an aerial "pas de deux," and I feverishly watched their actions, till rushing round with unceremonious alacrity, I secured the wary pair; and, having safely boxed them alive without hurting them, I did not mind a wet foot, if I found an egg on my paper.

Solitary, almost globular, pale amber-coloured, half millimètre in diameter, there it lay, a silent witness that even a Réaumur is apt not to mind his own "wise saws." Oviposition, then, not copulation, is the object of the ♂ dragging the ♀ along the water, and dipping her at nearly regular intervals. The ♀ thus caught, after laying what was

probably her first ovum, laid 123 more, each loose by itself, in my box ; and to von Siebold's observation on *L. scotica*, Don., I have now to add the fact, that its near ally *L. flaveola*, L., also drops her eggs, guided by the male, during flight, singly, each at a distance, loosely in the water, and not in bunches attached to any object. On the 3rd, and again on the 10th September, I re-witnessed the facts here detailed at the same pond, but without actually seeing an egg dropped. *En revanche*, having on the latter day induced a collector, whom I accidentally met, to catch a few of these dragon-flies, I saw a dying, pinned ♀ deposit her eggs in one bunch in his box. But, from the flaccid condition and great softness of these eggs, I conclude that they are not impregnated, and were only got rid of in the dying struggles of the insect. This incident, however, serves to show how careful we ought be to abstain from assuming that vital functions are performed in a similar way under natural and artificial conditions. "*Experientia docet*," that false and real data lie sometimes very close together, and that it will always be a great tax on the human mind to discern between the two. I have preserved in spirits both the unimpregnated egg-bunch and the mature loose eggs.

South Norwood, S.E., 11th September, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 9).

BY H. W. BATES, F.Z.S.

LOXANDRUS SUBCORDICOLLIS, n. sp.—*Elongato-oblongus, niger, politissimus, late iridescens, antennis, labro, palpis pedibusque rufo-fulvis; thorace antice late rotundato, postice valde sinuato-angustato, angulis posticis prominulis, basi grosse pauciter punctato, fovea utrinque lata profunda; elytris profunde striatis; abdomine piceo-rufo.*

Long. 3¼ lin. ♂.

Distinguished from *L. xanthopus* chiefly by the thorax being dilated anteriorly and conspicuously narrowed behind ; in front it is not much narrower than the base of the elytra.

St. Paulo, Upper Amazons.

LOXANDRUS CURTONOTUS, n. sp.—*Oblongus, piceo-niger, politus, iridescens; labro, antennis, palpis pedibusque rufo-fulvis; thorace brevi, transverso, antice rotundato, postice modice angustato, angulis posticis prominulis, suprâ toto basi punctato, fovea utrinque profunda, elytris punctato-striatis; subtus rufo-piceo, episternis impunctatis.*

Long. 3½ lin. ♂ ♀.

Closely-allied to the preceding, but a distinctly broader and more robust insect, and distinguished by its punctured striæ.

Ega.

LOXANDRUS GRAVESCENS, n. sp.—*Robustior, oblongus, postice obtusus, piceo-niger, nitidus, leviter iridescens* (♀ *elytris sericeo-opacis*), *antennis, labro, palpis pedibusque rufis; thorace transverso, antice rotundato, postice prope basin sinuatim angustato, angulis posticis, rectis, suprà medio basi parce punctato, fovea lata utrinque profunda; elytris striatis, striis subtiliter punctatis; corpore subtiliter sericeo, impunctato.*

Long. $3\frac{1}{2}$ — $4\frac{1}{2}$ lin. ♂ ♀.

A species of somewhat heavier "build," especially in the larger individuals, than usual in this genus; with rather shorter and stronger legs and broadly rounded apex. The anterior angles of the thorax are also blunt and deflexed, giving a more obtuse appearance to that segment.

Banks of R. Tapajos.

LOXANDRUS SUBPARALLELUS, n. sp.—*Elongato-oblongus, niger, politus, leviter iridescens, antennis, palpis tarsisque fulvo-rufis, antennarum articulis 3—4 nigro-maculatis; thorace antice late dilatato-rotundato, postice angustato, angulis posticis rectis; toto basi sparsim grosse punctato; elytris striatis, striis subtiliter punctulatis; corpore subtiliter piceo-sericeo, impunctato.*

Long. 5 lin. ♂.

The thorax anteriorly is not much narrower than the elytra.

St. Paulo, Amazons.

LOXANDRUS RUBESCENS, n. sp.—*Oblongo-oratus, læte iridescens, rufus, capite suprà et elytris (sutura marginibusque exceptis) piceo-nigris, antennis (basi flavo excepto) fuscis, palpis pedibusque flavis; thorace quadrato, postice paululum angustato, angulis posticis prominulis, suprà medio basi grosse pauciter punctato, fovea lata profunda; elytris profunde striatis, striarum fundis subtilissime punctulatis; metasterno grosse sparsim punctato.*

Long. $2\frac{1}{2}$ — $3\frac{1}{4}$ lin.

Upper Amazons.

LOXANDRUS PICTICAUDA, n. sp.—*Oblongo-oratus, leviter iridescens, piceus, antennarum basi, palpis pedibusque flavo-testaceis; elytris margine lato apicali maculaque parva suturali propinqua flavo-testaceis, interdum nigro-marginatis; thorace quadrato, interdum sanguineo, postice paululum sinuato-angustato, basi punctulato, fovea utrinque angusta profunda; elytris punctato-striatis; episternis impunctatis.* *Long.* $2\frac{3}{4}$ lin. ♂ ♀.

R. Tapajos.

LOXANDRUS RUFOSTIGMA, n. sp.—*Oblongus, niger, leviter iridescens,*

antennis, palpis pedibusque rufo-testaceis, elytris margine apicali angusta indeterminata maculaque ovata suturali prope apicem rufo-testaceis; thorace quadrato, postice paululum angustato, angulis posticis rectis, basi utrinque punctato et fovea minus elongata, lata, profunda; elytris punctato-striatis; subtus, meso- et metasternis abdominisque basi punctatis.

Long. $3\frac{1}{2}$ —4 lin. ♂.

In colours of apex of the elytra this species resembles *L. picticauda*, but it is distinguished by its larger size, deeper black colour, the very much narrower pale apical border, and especially by the coarsely punctured episterna of its meso- and metathorax. It is evidently closely allied to *L. posticus*, Brullé; in which, however, the anterior femora are partly black.

Ega, Upper Amazons.

LOXANDRUS QUADRINOTATUS, n. sp.—*Oblongus, piceo-fuscus (elytris iridescentibus); antennis, palpis, capite antice, thorace pedibusque rufo-testaceis, elytris macula quadrata humerali, interstitia 5—8, alteraque minori prope apicem, interstitia 2—4 occupanti, flavo-testaceis; thorace quadrato, lateribus sub-regulariter rotundatis, angulis posticis sub-rectis, apice obtusis, suprâ basi sparsim punctato, utrinque fovea elongata sulciformi; elytris fortiter striatis; corpore subtus iridescenti, sternis (præcipue metasterno) punctatis.*

Long. $3\frac{1}{2}$ lin. ♂ ♀.

Obydos, Lower Amazons.

LOXANDRUS TETRASTIGMA, n. sp.—*Oblongo-ovatus, nigro-piceus, nitidissimus (elytris late iridescentibus); antennis, palpis, capite antice pedibusque flavo-testaceis, elytris macula rotundata humerali, interstitia 6—8, alteraque parva prope apicem interstitia 3—4 vel 3—5 occupanti, fulvo-testaceis; thorace quadrato, lateribus rotundatis, angulis posticis sub-rectis, suprâ basi parce punctatis, utrinque fovea ad fundum sulcata; elytris fortiter striatis, striarum fundis punctatis; corpore subtus iridescenti, sternis (præcipue metasterno) punctatis.*

Long. $2\frac{1}{3}$ —3 lin. ♂ ♀.

Closely allied to the preceding, differing only in the darker colour, smaller size of the elytral spots and distinctly punctulated striæ; besides being a smaller insect.

Ega, Upper Amazons.

LOXANDRUS VITTATUS, n. sp.—*Oblongus, fusco-piceus, iridescens, labro, palpis, antennarum basi pedibusque rufo-testaceis, elytris vitta, interstitium 6^{um} occupanti, postice abbreviata, maculisque binis posticis*

suturam versus flavo-testaceis, ornatis, marginibus lateralibus apiceque pallidulis; thorace quadrato, antice sat rotundato, postice angustato, angulis posticis prominulis, basi impunctato, fovea utrinque profunda; metasterno punctulato.

Long. 4 lin. ♀.

The pale vitta of the elytra commences at the base, spreading there to the 7th interstice, but through the rest of its course it is confined to the 6th, and terminates at two-thirds of the elytral length; it is succeeded, a little more inward, by an irregular pale spot on the 4th and 5th, and this again by a smaller spot on the 3rd and 2nd interstices. The elytra have impunctate, sharp striæ.

Rio Janeiro. Taken by the late Rev. Hamlet Clark.

LOXANDRUS VIRIDESCENS, n. sp.—*Minor, gracilior, picco-niger, elytris sericeis, iridescentibus, leviter viridi-tinctis, antennis, palpis pedibusque testaceo-rufis; thorace valde transverso, elytris multo angustiori, antice leviter rotundato, postice paululum angustato, marginibus postice latius explanatis rufo-testaceis, angulis posticis prominulis, supra basi utrinque punctis majoribus perpauca foveaque breviori profunde impresso; elytris punctulato-striatis, sutura marginibusque plus minusve rufis; corpore subtus impunctato, sericeo-nitenti.*

Long. 3 lin. ♂ ♀.

Generally distributed throughout the Amazons region, under sediment, on the banks of the rivers.

LOXANDRUS OPACULUS, n. sp.—*Oblongus, sub-parallelus, infra ferrugineus, supra niger, elytris sericeo-opacis palpis antennarumque basi rufo-testaceis, pedibus rufo-piceis; thorace quadrato, elytris vix angustiori, antice vix rotundato, postice parum angustato, angulis posticis haud prominulis sed distinctis, marginibus rufo-piceis, medio basi punctis paucis magnis, fovea utrinque brevi fortiter impressa; elytris subtiliter punctato-striatis, sutura postice marginibusque rufo-piceis; corpore subtus impunctato.*

Long. 3 lin. ♂ ♀.

The whole under-surface of the body is of a clear ferruginous red hue in both my specimens: this character, together with the nearly square thorax and the very fine sharply impressed striæ, amply distinguish this species.

Banks of the Tapajos.

LOXANDRUS MACRODERUS, n. sp.—*Oblongus, picco-niger, politus, læte iridescens, labro, epistomate, palpis, antennarum basi (reliquis obscurioribus), pedibusque flavo-testaceis; thorace elongato, quadrato, postice haud angustato,*

angulis posticis rotundatis, margine laterali reflexo rufo-testaceo, suprâ medio basi grosse punctato, fovea utrinque elongata profunda; spatio inter foveam et angulum fortiter convexo; elytris fortiter punctulato-striatis, sutura postica marginibusque rufescentibus, apice flavo-testaceo; corpore subtus lævi, splendide iridescenti.

Long. 3½ lin. ♀.

Resembles the *Platyderi* of Europe in the shape of the thorax.

St. Paulo, Amazons.

LOXANDRUS ATTENUATUS, n. sp.—*Elongatus, angustus, niger, nitidus, lubro, palpis, antennarum articulo basali pedibusque flavo-testaceis, elytris macula parva suturali apicem versus rufo-testacea; thorace elongato, subcordato, antice rotundato, postice valde angustato, prope angulos posticos reflexo, medio basi grosse crebre punctato, fovea utrinque elongata sulcata, spatio inter foveam et angulum plano, lævissimo, reflexo, angulis obtusis; elytris fortiter punctato-striatis; corpore subtus piceo, lævi.*

Long. 3 lin. ♀.

Banks of Tapajos.

LOXANDRUS CELEBENSIS, n. sp.—*Elongato-oblongus, nigro-piceus, toto sericeo-iridescens, palpis antennarumque basi piceo-rufis, pedibus piceis; sulcis frontilibus latis, vix impressis; thorace quadrato, lateribus æqualiter rotundatis, anguste reflexo-marginatis, angulis posticis rotundatis, suprâ lævissimo, fovea utrinque basali elongata, obliqua, ad fundum sulcata; elytris fortiter striatis, striarum fundis punctulatis; subtus, meso- et metathoracis episternis abdominisque basi punctato-rugosis, ♂ tarsorum anticorum articulis tribus valde obliquis, solis squamis pectinatis, elongatissimis, tarsi intermediï posticique multisulcati.*

Long. 4 lin. ♂.

Celebes. From Mr. Wallace's collection.

The following species differs so essentially from the *Loxandri*, and from the allied genera *Abacetus*, *Drimostoma*, *Trirammatus*, &c., that a new genus must be formed for its reception.

Genus METONCIDUS.

Gen. char.

Mentum. Central tooth much smaller than side-lobes, broadly-rounded at the apex.

Palpi. Terminal joints cylindrical, truncate.

Antennæ. Moderately short, filiform.

Head. As in *Loxandrus*, frontal pits small, rounded.

Thorax. Basal fovea single on each side, broad and deep, without sulcus.

Elytra. Strongly convex posteriorly; without abbreviated scutellar stria, and with a series of large punctures posteriorly on alternate interstices.

Metathoracic episterna elongated, narrow, inner margin sulcated.

Anterior tarsi ♂ with three dilated, short, cordiform joints, not oblique, and furnished beneath with close-fitting squamæ, in two rows.

METONCIDUS TENEBRIONIDES, n. sp.—*Oblongus, postice valde convexus, niger, nitidus, palpis, antennis pedibusque picco-rufis, tarsis pallidioribus; thorace transversim quadrato, antice parum rotundato, postice leviter angustato, marginibus angustis, angulis posticis sub-rectis, suprâ impunctato, fovea utrinque basali oblonga, profunda, fundo obtuso, lævi; clytris pone medium angustatis, postice iterum paulo dilatatis, suprâ punctulato-striatis, interstitiis 1, 3, 5, postice punctis majoribus seriatim impressis; corpore subtilis lævissimo.* Long. 5 lin. ♂.

Ega, Upper Amazons.

Kentish Town: October, 1871.

DESCRIPTION OF A NEW SPECIES OF PHOXOPTERYX, FROM GREAT BRITAIN.

BY C. G. BARRETT.

When collecting in the Norfolk fens this summer, I several times met with a very pretty *Tortrix* of the genus *Phoxopteryx* of Guenée, which appears to be undescribed, and which I accordingly characterize as follows:—

PHOXOPTERYX PALUDANA, n. sp.

Antennæ brown. Head and thorax whitish. Fore-wings silvery-white, clouded with very pale chocolate towards the hind margin. On the inner margin, from the base to the middle, is a chocolate-brown blotch, reaching more than half across the wing, and very obtusely angulated towards the costa. Opposite to this angle, a bright chocolate fascia, exteriorly edged with white, rises on the costa, proceeding half-way to the anal angle, when its exterior margin forms a very acute angle towards the apex of the wing, and touches a cloud of the same colour which occupies the tip. On the costa, towards the apex, the usual short streaks are faintly visible. Hind-wings pale grey in the male; dark grey in the female.

Allied to *Lundana*, but with longer, narrower wings, the dorsal blotch much flatter and more angulated, the fascia distinct and much more acutely angulated, and the space beyond it pale.

Found flying, just before dusk, among the shortest of the rank herbage at Ranworth fen, in June, and again in August.

Mr. Bond has also shown me specimens from the Cambridgeshire fens. Norwich: 28th September, 1871.

Occurrence in Britain of Atomaria atra, Hbst.—I have long endeavoured to detect this species among the numerous members of its genus that have from time to time come under my observation; but always in vain, until very recently, when I found a single example of it among some enigmas sent to me by Mr. Wollaston, by whose sister-in-law, Miss E. Shepherd, it was swept up in a low, damp copse, alongside the Medway, about half-a-mile from the Powder Mills, near the village of Leigh, during the past summer. Mr. Wollaston has also long, and until now ineffectually, been on the "*qui vive*" for this insect, which is the more interesting, since it is figured by Sturm as the type of the genus. *A. atra* is apparently most closely allied to *A. fuscata*, to dark examples of which it bears considerable resemblance. Its type form, however, is deep black in colour, and it has a longer, more convex and more laterally rounded thorax, and wider and stronger punctuation on the elytra, which are more acuminate behind in outline.—E. C. RYE, 10, Lower Park Field, Putney, S.W., October, 1871.

Occurrence in Britain of Throscus carinifrons, Bonv.—Mr. Wollaston has also recently sent to me for determination a *Throscus*, which must be referred without doubt to Bonvouloir's species above named (Ess. mon. sur la famille des Throscides, p. 20). Two examples (one, now, thanks to Mr. Wollaston's generosity, in my own cabinet) were taken by that gentleman during the hot weather of August last, crawling rapidly over a wooden fence in a garden at Dry Hill, Tonbridge; and, although constantly looked for, no others were found. These two examples are apparently ♂ and ♀, the male being the smaller, with flatter and laterally more sinuous thorax, and stouter antennal club;—sexual differences also to be observed in *T. dermestoides*, which it superficially most resembles, being very nearly of the same size as small specimens of that insect; but the two frontal keels of its head are more distinct and extend backwards to the pro-thorax; its eyes are divided considerably beyond the middle by a narrow, horny plate, its thorax is flatter, and (in the ♂, at least, and as figured by de Bonvouloir) very evidently and suddenly sinuously contracted towards the front from the lower third; the striæ of its elytra are more delicately impressed, and the interstitial punctures rather clearer, as the surface is not so coarsely granulated; the elytra themselves are more acuminate behind, and the tibiæ are not so stout. Its larger size, the more evident contraction of the sides of its thorax towards the front, the much less thick punctuation of the interstices of its elytra, &c., at once separate it from *T. elateroides*.—ID.

Capture of Trichonyx sulcicollis, Reichenb., at York.—I have recently taken a single example of this gigantic Pselaphid, crawling on my door-step. Further search has failed to discover any more specimens. The occurrence of this fine species so far north in Britain can scarcely fail to be of interest.—H. HUTCHINSON, 21, St. Anne's Street, Cemetery Road, York, October, 1871.

Note on the question of hybrids in Coleoptera.—During the past summer I noticed *Crepidodera ferruginea* in copulâ with *C. rufipes*, at Llangollen. I have also observed the first of those species in copulâ with *C. transversa*, on Chat Moss.—T. MORLEY, 57, John Street, Pendleton, Manchester, September, 1871.

Notes on the metamorphoses of Metatropis rufescens.—Some few years since, when beating a willow bush, I obtained a single specimen of *Metatropis rufescens*. This I was told at the time was the second example of that species known to have been taken in England; but all my efforts to find more in the same way proved failures.

Last spring, Mr. J. Scott informed me that it had been taken in Switzerland, on *Circœa lutetiana*; and, as I knew that plant grew in the neighbourhood, I determined to discover the bug, if possible. However, I was unsuccessful, until June last, when I had the pleasure of capturing on that plant about two dozen small Hemipterous larvæ, which, as I expected, proved to be those of *M. rufescens*. Having never tried to rear any of the *Hemiptera*, I had some doubts of being able to do so successfully; but, as the food plant was small and manageable, I determined to make the attempt; so I carefully removed some of the growing plants, and, when I got home, potted them, covered them with a gauze-topped cylinder, put the bug-larvæ upon the plants, and left them to their fate. The next day I was glad to see some of them with their proboscides buried in the soft flower-buds, sucking away at the juices with vigour. They fed up well, giving me no trouble beyond that of occasionally watering the plants, and changed their skin three times during captivity, the wing-cases becoming more distinct after each moult. They were full-fed by the end of August.

The mode of casting the skin, especially the last, was to me most interesting. As the creature increases in size the skin gets too short for it, and the anal extremity becomes drawn up somewhat over the abdomen. It now fixes itself firmly by the claws to a leaf or stem of the plant, head downwards. The head is bent under, the antennæ are laid along between the legs, and the larva appears to forcibly straighten the abdomen, the pressure causing the skin behind the head to split, and the thorax to be protruded through the opening. Leg after leg is drawn slowly out, the head and antennæ following; the wing-cases and wings are drawn down to their proper proportions, and the imago then remains suspended by the last segment. In a short time it extricates itself entirely, but is some time before coming to its proper colour and firmness. The old coat would, I think, make a good object for the microscope.—HENRY MONCREAFF, High Street, Portsmouth, October, 1871.

Captures of Hemiptera at Bournemouth, &c.—From the 9th to 25th September I was at Bournemouth, and, although the weather was dry and sunny, insects, not numerous at first, became scarcer day by day, until at last hardly one was to be had; hence I concluded that my visit should have ended about the time it began. I note only the best captures.—

Corizus Abutilon, Rossi: one, by sweeping *Psamma arenaria*. This is the second recorded English specimen.

C. parumpunctatus, Schill.: two, by sweeping the *Psamma*.

Hypnophilus micropterus, Curt.: one, with the membrane of the elytra fully developed:—a very rare form.

Phytocoris ——— ? : one specimen among heath, near pine trees. Agrees with the description of *Ph. pini*, Kirschb., in many respects, but differs in having the first joint of the antennæ longer than the pronotum.

Salda arenicola, Scholz. The soil of the Bournemouth district is sand to a great depth, and at the shore the cliffs show that the sand rests on a sub-stratum of black clay. At several places where the sand and clay meet, water oozes out and runs over the latter, which crumbles down under its influence. In such situations, as mentioned by Mr. Edward Saunders (E. M. M., Vol. vii, p. 157), especially at Boscombe Chine, this *Salda* was not uncommon, but very difficult to see when at rest on the concolorous clay, and hard to capture when it moved, which was by flight, and not by leaps *more Saldarum*. Nevertheless, by the aid of a stick, I persuaded a few to enter my net, where they were easily bottled.

Salda ——— ? : with the above I got one example which I cannot refer to any species known to me. It is quite unlike *S. arenicola*, being of a short, broad-oval form, and of a brown-black colour, almost without markings on the elytra.

Monanthia 4-maculata, Wolff: several, beaten from an old crab-tree in the New Forest, near Brockenhurst.—J. W. DOUGLAS, Lee, 3rd October, 1871.

Phacopteryx brevipennis at Ranworth Fen.—Among some miscellaneous *Neuroptera* kindly collected for me by my friend Mr. Barrett, is an example of this insect, captured at Ranworth Fen in September. It is the fifth recorded British specimen; the others being Curtis's type, of uncertain locality, two taken at Scarborough by Mr. Fereday, and one at Bowdon by Mr. B. Cooke (see Ent. M. Mag. ii, p. 95). Probably it is of rare occurrence generally, for I have seen but few examples in the various boxes of European *Trichoptera* that have passed through my hands.—R. McLACHLAN, Lewisham, 2nd October, 1871.

Occurrence of *Agrypnia Pagetana* near Edinburgh.—While staying at Edinburgh in August last, I captured fourteen specimens of the Neuropterous *Agrypnia Pagetana* by sweeping along the margins of Duddingston Loch, at the foot of Arthur's Seat. I believe this is the first time that the species has been met with in Scotland; and, so far as I am aware, the only locality previously recorded for it is the Fen District of Norfolk, where Mr. Winter, of Aldeby, took it in some numbers; Curtis's type specimen being from the same part of the country.—P. C. WORMALD, 2, Clifton Villas, Highgate Hill, N., 21st September, 1871.

Pieris Daplidice at Folkestone.—This autumn has produced a fair return; a *Daplidice* taken at Sandgate by Mr. J. W. Gore, and another captured above West Cliff, being the best.—T. H. BRIGGS, Folkestone, 17th October, 1871.

Note on a probably new species of *Platyptilus*.—I have long been of opinion that some confusion existed about the two plume-moths, termed by British authors *Platyptilus trigonodactylus* and *Platyptilus Zetterstedtii*, and I accordingly consulted Dr. Staudinger upon the subject, sending him an English *trigonodactylus*, and a sketch of our English *Zetterstedtii*, from a specimen lent me by Mr. Doubleday. He replies thus:—"My opinion is, that the species sent under the name *trigonodactylus*, Stt., is, without any doubt, *Zetterstedtii*, Zell., the larva of which feeds on *Tus-silago farfara*. The insect which you term *Zetterstedtii* in England, and of which "you have sent me a figure, is entirely unknown to me, and most probably a new

“and unnamed species. *Trigonodactylus*, Stt., ought, therefore, to be looked upon “as a synonym of *Zetterstedtii*, Z., and not of *gonodactylus*, S. V., which is allied “to, but decidedly different from, *Zetterstedtii*.”

It would seem at first that the tangle was unravelled, and that all we had left to do was to name our English species, but such is not quite the case. I have at present a specimen from Herr Mühlrig, labelled *gonodactylus*, and yet, without doubt, a *trigonodactylus*, Stt.; and next, in the paper on Swedish plume-moths by Herr Pastor Wallengren, a *Platyptilus Zetterstedtii* is spoken of, the larva of which feeds on *Senecio nemorensis*. The confusion is therefore not entirely confined to the Entomologists of Gt. Britain; and I shall, in the next place, endeavour to find out what is the *gonodactylus* of the Vienna Catalogue, as indicated by Dr. Staudinger, and what is the *Zetterstedtii* of Wallengren.

It would be highly interesting if those Entomologists who have taken this rare British plume would give full particulars of its capture. It is very scarce in collections, and probably the specimens which exist are not more than a dozen. As a *Platyptilus*, the larva would be certain to live in the interior of the stem of some composite plant, and amongst the most probable are *Inula crithmoides*, *Chrysocoma linosyris*, and *Cineraria campestris*, all of them maritime in their haunts.

If this prove to be an unnamed insect, it would be very pleasing to me if Mr. Doubleday would allow his name to be affixed to it.—R. C. R. JORDAN, 35, Harborne Road, Edgbaston, Birmingham, *September 15th*, 1871.

Butalis cicadella at Southend.—Observing in the September number of the Magazine the notice of the capture of this insect at Weybridge, by Mr. McLachlan, and reference made to my own captures, I think it as well to state that I took about a dozen specimens of this moth at Southend, about 20 or 25 years ago, in the flowers of a kind of dandelion, and they remained with a memorandum under them as “new species” till Mr. Stainton kindly determined them a few years back. At the time of their capture it was almost impossible to name these obscure species. I remember I took them both to Mr. J. F. Stephens and to Mr. Bentley, who could not identify them. On the day I captured this new species, I was fortunate enough to add three other species to our list, viz.: *Acidalia perochraria*, *Catoptria citrana*, and *Gelechia pictella*: four new species in one day I expect will never fall to my lot again.—SAMUEL STEVENS, 28, King Street, Covent Garden, *October*, 1871.

Heliothis armigera near Exeter.—After an interval of ten years, I have again captured, in my garden, a single specimen of *Heliothis armigera*. The perfect state of the specimen would indicate its birth-place to be not far distant.—H. D'ORVILLE, Alphington, near Exeter, *October 18th*, 1871.

Note on the sound produced by Chloephora prasinana.—I only noticed yesterday in the ‘Annual’ for 1871, that Dr. Knaggs seems rather to doubt the account of the sounds made by *C. prasinana* (pp. 78, 79).

It will be found that the fact was stated by me long ago in my “History of British Moths.” I wrote of my own knowledge; I remember the time, place, and circumstance well: I was then at Bromsgrove School, and was out “hunting” one evening; and I remember that it was very early, and before actual dusk, on a hill, or rising ground rather, some two or three miles from the town, near

Stoke Court, where I saw many of these moths, the only time I ever saw them alive, flying up and down and very fast, and hard to catch, near or above the top of an old-fashioned high hedge, on the side of a wide, grassy lane.

I could not help being struck by the stridulous sound they made as they flew. The fact is, in my opinion, beyond all doubt or question; and it is recorded in my book as stated above, "This insect makes a curious stridulous noise when flying."—F. O. MORRIS, Nunburnholme Rectory, Hayton, York, September 14th, 1871.

Captures of Lepidoptera at Glanvilles Wootton.—The following are the best of the *Lepidoptera* I have taken during the past poor season at Glanvilles Wootton. March, *Taniocampa miniosa*, *Heusimene fimbriana*; April, *Eupithecia irripuata*, *E. coronata*, *Hyponomeuta vigintipunctata*, *Eubolia multistrigaria*; May, *Lobophora viretata*, *Hypsipetes ruberata*, *Anchylopera diminutana*, *Odontoptera bidentaria*; June, *Egeria cynipiformis*, *Thera firmata*, *Macularia alternata*, *Lobesia Servillana*, *Eupacilia humidana*, *Anchylopera ramana*, *Lampronia rubicella*, *Fumea roboricolella*; July, *Leucania comma*, *Cucullia asteris*, *Heliothis peltigera*, *Melanthia piceata*, *Geometra papilionaria*, *Acidalia imitaria*, *Carpocapsa splendana*, *Pempelia consociella*; August, *Lithosia stramineola*, *Ephyra poraria*, *Crambus pinetellus*; September, *Trichiura cratagi*, *Cidaria psittacata*, *Cerostoma alpella*, *Zelleria hepariella*, *Gracilaria cuculipennella* and *elongella*.—C. W. DALE, Glanvilles Wootton, October, 1871.

Captures of Lepidoptera in the New Forest.—I have to report the capture of a larva of *Acronycta alni* on bramble, near Foxleaze, in the New Forest. I was beating for larvæ among the underwood, when I noticed a larva seated on a thick pad of silk, on a bramble leaf, and which, on closer inspection, proved to be that of *A. alni*. It seemed to be changing its last skin, but its appearance struck me as being peculiar, for, although it had not freed itself from its old head, the colours and markings were those of the adult, as it had those peculiar clubbed hairs which, I believe, are only found after the last change has been accomplished. It was also in a very flaccid condition, and did not move when touched. However, I kept it, hoping it might prove alive; but, on the second day after finding it, it was evidently dead through starvation, from not being able to free itself from its old head.

I also had a larva of *Acherontia Atropos* brought me; it was of the olive-coloured variety, and has since buried.

My best captures at sugar during my stay of a fortnight (from 5th to 21st August) were: *Cerigo Cytherea*, several; *Tryphæna interjecta*, one; *T. subsequa*, which came regularly to sugar in one locality, though not in any abundance, three being the largest number seen in one evening (I took altogether eleven specimens, most of them moderately good); *Catocala promissa*, seven, and *C. sponsa*, several. This species was most abundant in the larger enclosures: I have several times dislodged it and *promissa* from the lower boughs of oak, when beating for larvæ; but it always flew to the top of the trees when thus disturbed, so that it is not possible to capture it by that means.—B. LOCKYER, Camden Road, London, N.W., August 25th, 1871.

Natural history of Noctua umbrosa.—The larva of this species having eluded the search of myself and many of my friends for a number of years, a belief gained

ground with us, that it probably closely resembled that early pest *xanthographa*; and this belief was strengthened three or four years ago, by the fact of Mr. Harwood having bred one specimen of *umbrosa* from a lot of larvæ which he had collected as those of *xanthographa*.

I have at length been able to prove our surmise to be correct, thanks to Mr. George Norman, to whom I feel deeply indebted for his taking much pains in obtaining and sending me from Forres, three separate batches of eggs of *umbrosa*, on July 27th, 28th, and 30th, 1870. From them, the young larvæ began to hatch respectively on August 3rd, 5th, and 11th. At first, grass was provided for them, but they refused to eat, and some of them died. I then supplied them with dock leaves, and thenceforth all went well; they fed and throve satisfactorily; but, towards the end of November, dock began to fail, and the few leaves I could then obtain were supplemented with bramble, of which the larvæ partook freely. My chief object being to obtain figures of the larvæ, I did all I could think of to force them on to full growth, and succeeded with some of them by feeding with *Plantago lanceolata*, *Galium mollugo*, *Vinca major*, and garden-strawberry leaves, all of which they ate at intervals, when the rigour of winter in the least abated. At length the Periwinkle became the only food procurable, and on this they did very well; for, even while the snow lay on the ground, the leaves of this plant continued green and succulent; thus, between the intervals of hard frost, the larvæ crawled out of their temporary hibernacula of curled-up, dry bramble leaves, and partook of their food. Of course they were not kept in the open air, but in a room without a fire, so that at no time were they exposed to frost.

Towards the end of February and beginning of March, 1871, young dock leaves began to appear, and, with an increase of temperature, the larvæ became more lively and hungry; the smaller ones, whose coats had become dingy, now moulted and fed, while the others that had reached their full growth about Christmas began to stir, and show symptoms of approaching pupation; they grew smaller, their colours merged into a darkness, which spread over them as they retired into moss; several of them becoming pupæ between February 27th and March 11th.

The others continued to feed chiefly on dock, with a little of *Scrophularia aquatica*, and attained their full size the first week in April; they then, however, like their predecessors, began to dwindle, and became darker and darker till they were blackish-brown. A few entered the earth, the rest went into moss, where they assumed the pupa state, but without forming any cocoon in either; though those in the moss appeared to be steadied in their positions by a slight thread or two. The moths appeared from June 8th to 13th.

The egg is circular, domed above and flattened beneath, finely ribbed and reticulated. When first laid, it is of a yellowish-white colour, and changes in six days to a glistening pink, and finally to pinkish-grey.

The young larva, when hatched, had at first a pale brown head, and greenish-grey body, paler and pellucid at the segmental divisions; in eight or nine days they were pale, semi-transparent, yellowish-green, with distinct black dots. At their next change, at the end of another week, they were three-eighths of an inch long, and not translucent, but with a suffusion of opaque-brown over the back and sides, giving them a velvety, brownish-green look; and there then appeared dorsal, sub-dorsal, and lateral lines, paler than the ground; between the lateral

line and spiracles the space was filled with a darker tint of the ground colour, forming a broad dark stripe. At this stage the character of *umbrosa* is very distinct from its congener, and remains so until the length of about five-eighths of an inch is attained; but the next moult introduces the design that at once recalls the well-known *xanthographa*, and continues throughout their future larval career.

There were three varieties of the general colouring in each of the three broods, some being yellowish, some brownish, and others of a greyish-brown, but in the detail of their markings they were all very constant. The individual from which the following description was drawn was one of the yellowish varieties.—

The full-grown larva is from $1\frac{1}{4}$ to $1\frac{3}{8}$ inch in length, moderately stout and cylindrical, though tapering a little at the anterior segments, the head being smallest, the last segment also sloping down on the back from the twelfth, and tapering a little to the extremity. Viewed on the back, the colour of the head is pale brownish, freckled with darker brown, and streaked with brown on the front of each lobe, and very shining; the skin generally smooth and rather velvety on the rest of the body, though a little shining on the back of the second segment; the dorsal line is very pale whitish-ochreous, edged with a dark brown line on each side; it is not quite a simple line, but commencing broad on the front of each segment, soon narrows, expands again just at the middle, again contracts, and widens again at the end; the sub-dorsal line is of uniform thickness throughout its course, and is also of the same whitish-ochreous tint, edged on its lower side with a fine, dark brown line, and on its upper-side by a wider brown stripe, bearing a black dash, sometimes rather of a wedge shape, on the anterior half of each segment; the ground-colour of the back between the lines is ochreous or brownish, marked with fine, longitudinal, dark brown, wavy streaks, which are variously disposed in their aggregation, sometimes suffusing the ground-colour in a narrow diamond form; in other examples more suffused behind, but generally these streaks give more depth of colouring at the anterior part of each segment; the front pairs of tubercular dots are black, and they often send forward a fine black streak; the hinder pairs are also black, but, from standing within the before-mentioned black dashes, are invisible; the twelfth segment has the sub-dorsal lines slanting inwards for two-thirds of its length, where the last pair of the black dashes end abruptly, as do also the suffused, wavy streaks, and from that part the sub-dorsal lines bend outwards, and resume their former course, approximating towards the end of the dorsal line at the anal extremity; the colouring of the side as far down as the spiracles consists of two longitudinal, broad bands or stripes of equal width throughout, the upper being pale ochreous (sometimes bearing a few brown scattered freckles), the lower dark brown, containing a slanting dash of still darker brown made up of atoms; on the lower edge of this come the spiracles, which are not very conspicuous, being small dirty whitish, outlined faintly with black. The sub-spiracular stripe is of pale, unfreckled ochreous, and is attenuated a little at each end; the belly and legs are of a very slightly deeper tint of the same, and there are some minute tubercular dots and freckles of dark brown above and upon the legs, which are tipped with dark brown.

The pupa is about half-an-inch in length, moderately stout and smooth, with no striking peculiarity of form, dark brown in colour and rather shining.—WM. BUCKLER, Emsworth, September, 1871.

Notes on Nomenclature.—For the sake of brevity, I shall confine myself at present to clearing up some misapprehensions which exist respecting Linnean names, and some minor points. Mr. Crotch (E. M. M., viii, p. 71) states that, when Linnaeus appended “*vulgo Morio*,” “*vulgo Satyrus*,” &c., to some of his descriptions in the first edition of the “*Fauna Suecica*” (1746), he did not regard these as specific names. In the eighth edition of the “*Systema Naturæ*” (1753), I find under each genus a list of the species described and named in the “*Fauna Suecica*,” ed. i, mostly with the same names. In Syst. Nat., ed. x (1758), p. 481, I find the following note: “*Trivialia nomina nonnulla, in Faun. Suec. quondam vage imposita, mutavi, ut conformia evaderent per singulos ordines.*” Some of these rejected names (called “trivial” by Linnaeus himself,—“specific” in his phraseology), were subsequently adopted by Esper, Retzius, and others. I admit that the date of 1767 (Syst. Nat., ed. xii), sanctioned by the British Association as the commencement of our nomenclature, cannot be defended, because the species then described by Linnaeus must be identified by descriptions published by him in 1761 and 1764. It must, however, be observed that few changes of importance in nomenclature were made by Linnaeus subsequently to 1758, except changing a name which had been used twice in a genus, or sinking one of two synonyms, unfortunately, generally, the earliest. Therefore, if we go beyond 1758 (not 1767) for specific names of *Lepidoptera*, we should really find ourselves in chaos; and, in alluding to Aristotle, I did not mean more than this. It is assumed that “to draw the line” is to yield the main point in dispute; but the line cannot be drawn further back than the commencement of systematic nomenclature itself; *i. e.*, the works of Linnaeus. The controversy hinges mainly on the question whether the knot of synonymy should be cut or untied.

Mr. Briggs assumes that the older name has generally been changed for the better; but in most cases it has been changed for one or other of three reasons, of each of which I quote an example from Doubleday’s Catalogue: 1, imperfect information, *Hadena assimilis*, Doubl., corrected into *Crymodes eulis* in the addenda; 2, capricious changes, *Chortobius*, Guen.=*Cenonympha*, Hübn., for which Guenée is responsible; 3, names retained in error, *Erebia Medea*, W. V. (= *athlops*, Esp.) named, but not described in W. V. I have fallen into this last error in my own work.—W. F. KIRBY, Dublin, August 2nd, 1871.

Review:

A SYNONYMIC CATALOGUE OF DIURNAL LEPIDOPTERA, by W. F. Kirby. 8vo, 690 pp. London: John Van Voorst, 1871.

It is well known that Mr. Kirby has for some years been engaged in the compilation of the volume now under consideration, and we congratulate him upon the completion of his gigantic undertaking. That the term we use is fully justified will readily be admitted, when we state that the described species of Butterflies now reach the enormous number of 7,700, and that, with the synonymy, the number of references is estimated at 10,000. It is not our purpose here to criticise the author’s views as to genera and species, nor to enter into an examination of the nomenclature adopted; we look at the book simply from the point of its being an index to the study of the subject, indispensably necessary to every one engaged in forming

collections of the Butterflies of the world, and having to investigate the subtle, and, as it seems to us, often too finely-drawn, distinctions made by modern Entomologists. The question of specific right and the adoption of names must be left, to some extent, to individual opinion. The main object of every working Entomologist is to find out as readily as possible what others have done before him, and to attain this end the things most necessary are Catalogues, such as this of Mr. Kirby's; for the study of any group of insects without a Catalogue is as difficult as would be the acquirement of a language without a dictionary. We can scarcely suppose that Mr. Kirby has escaped the commission of errors, perhaps numerous, in compiling a work of such extent; but, be that as it may, Lepidopterists will not fail to accord to him the credit of having produced a Catalogue which must form the ground-work of all succeeding compilations of a like nature.

We must, however, protest against Mr. Kirby's dictum, as expressed in his preface, that "the name of every genus which has been previously employed in either Zoology or Botany should (be) changed;" believing this rule to be most pernicious, and that it is sufficient if it be applied to Entomology only; and even then we should be sorry to take the initiative in many cases. Also we protest against the application by Lepidopterists (including Mr. Kirby) of the term "Diurnal" *Lepidoptera* to Butterflies exclusively, as conveying a false impression; more especially as there are other terms already existing which quite meet the strict requirements of the case.

THE SPECIES OF THE TRICHOPTEROUS GENUS *PLECTROCNEMIA*.

BY R. M'LACHLAN, F.L.S.

In 1864, in vol. i of this Magazine (pp. 25—31), I gave a short sketch of the British species pertaining to *Polycentropus* and allies, including *Plectrocnemia*. I was then acquainted with only one species of the latter genus, and had added nothing to my knowledge when I published the "Trichoptera Britannica" in 1865. I then knew of only one species as existing in Europe.

A recent examination of the exponents of the genus in my Continental collection, has made evident to me the fact that I have *three* well-marked European species; and, moreover, that *two* of these exist in Britain. And yet, in appearance, all three present scarcely appreciable differences in their general characters. But certain slight—almost indescribable—peculiarities in some individuals, induced me to make a closer examination; and I find that (at any rate for the males) there are structural differences in the anal appendices of a most marked nature. I proceed to characterize the three species, with the remark that it behoves those Entomologists—British and Continental—to whom I have distributed types of *Trichoptera*, or for whom I have determined their species, to compare their insects with the diagnoses and notes now given.

1. *Appendices inferiores maris valde elongatæ, lanceolatæ, acutæ, paullo curvatæ, gradatim paullo divergentes, ad basin approximate; marginis interioris dimidio apicali obliquo.* . . . *P. conspersa*, Curtis.

2. *Appendices inferiores maris ad basin latæ, valde approximate, extus in processum elongatum, sub-cylindricum, in medio geniculatum, ad apicem paullo dilatatum, productæ.* *P. geniculata*, sp. n.

3. *Appendices inferiores maris breves, sub-ovales, obtusæ, vix divergentes, ad basin approximate.* *P. brevis*, sp. n.

PLECTROCNEMIA CONSPERSA, Curtis, Hag., M'Lach. (*senex*, Pict.).

♂. From the middle of the margin of the last dorsal segment proceeds a longly triangular pointed process; under this, and projecting beyond it, is a still longer upper penis-cover, appearing as a continuation of the process. Append. super. short, broad, sub-quadrate, or semi-ovate; externally, at the base, is a rounded tubercle. App. intermed. placed more internally, longer than the app. sup., narrow at



the base, but spoon-shaped at the apex. App. infer. inserted nearly close together in the middle of the margin of the last ventral segment, afterwards gradually diverging, very long, gradually curved upwards, lanceolate and acuminate, the tips acute, concave internally.

♀. The abdomen ends in a blunt tube, notched at the apex; at the ventral base of this tube are two short, divergent lobes, which do not extend to the apex of the tube.

In fresh specimens (especially of the ♀) the sides of the thorax are strongly clothed with black hairs, and on the anterior wings are decided, more or less oblique, fuscous markings.

Probably generally distributed throughout Europe; the common species in Britain. A detailed account of the structure of the ♂ sexual apparatus is given by Hagen, in Stett. Ent. Zeit., 1860, p. 285. In dry examples I cannot define the more internal organs of this apparatus.

Curtis's types are in Australia, hence a re-examination cannot be made of them. Pictet's type (*senex*) in the British Museum is reduced to a fragment. Stephens' types (*senex*) are two males and one female: the former both pertain to the second of my species (*geniculata*), the latter is what I consider the female of *conspersa*. There thus remain the questions whether Curtis's and Pictet's species be really identical, and also whether one or both of them represent my *conspersa*. This latter is certainly the most common and widely distributed species; and taking this into consideration with the fact that I possess *all three* from Switzerland, I think I am warranted in assuming that the species noticed by Curtis and Pictet are identical, and that my *conspersa* was intended by them.

PLECTROCNEMIA GENICULATA, nov. sp.

♂. From the middle of the margin of the last dorsal segment proceeds an elongate lobe, truncate at the apex, depressed and concave above (this lobe is probably in reality the upper penis-cover). Append. super. almost as in *conspersa*, but more rounded. Append. intermed. spini-form, long and curved, proceeding from either side of the base of the dorsal lobe. Append. infer. very broad at the base, occupying the whole of the margin of the last ventral segment, and so close together as to leave a scarcely perceptible space between them; externally each is extended into a very long, slender, sub-cylindrical process, which is strongly geniculate in the middle (appearing to be two-jointed), the apical half strongly directed inwards, so that the tips of the opposite processes nearly meet, the apex flattened and somewhat dilated.

♀. Unknown to me.

I fail to find any characters in markings, &c., whereby to separate this species from *P. conspersa*, notwithstanding that the appendices are so totally different in structure. But no doubt a series of fresh individuals of both species would present some slight external differences.

I have a British example of this, of which I do not know the exact locality; and another from Sedrun, in Switzerland, taken by Mr. Stainton, at the end of July. Two other British examples are in Stephens' collection, as noticed above.

PLECTROCNEMIA BREVIS, nov. sp.

♂. From the middle of the margin of the last dorsal segment proceeds a short, broadly triangular process; from beneath proceeds a very large, testaceous, shining, upper penis-cover, strongly curved downwards, and dilated towards the apex; the apical half of this cover is either double, or else it is very deeply canaliculate above. Append. super. very short, broader than long, the margin excised. Append. intermed. short, ovate, appearing to proceed from beyond the excision of the app. sup., and to be placed almost under the penis-cover. Append. infer. formed somewhat like those of *P. conspersa*, but half the length, only slightly acuminate and scarcely acute; the upper penis-cover (in dead individuals) is often curved down between these app. inf.

♀. Unknown to me.

When compared with the two foregoing species this seems to be slightly smaller; the dark streaks of the anterior wings are less evident, and the wings are closely sprinkled with small, rounded, golden spots, such as are usual in species of *Polycentropus*. In the neururation the first apical fork in the anterior wings is evidently, if only slightly, shorter than in the other species.

I have five males taken by Mr. Stainton at Sedrun, in Switzerland, at the end of July.

In order to render this notice of the genus more complete, I may mention that Hagen, in Stett. Ent. Zeit., 1858, p. 121, indicates two species (without name or description) from Archangel and the Kirgise Steppe respectively, as probably distinct from *conspersa*; and I possess one female, in very bad condition, from North America (possibly scarcely pertaining to the genus), in which fork one of the anterior wings extends to the discoidal cell, and with the third and fourth joints of the maxillary palpi much shorter.

Lewisham: August, 1871.

REMARKS ON THE RE-DISCOVERY OF THE LARVA OF *ANTISPILA*
RIVILLEI.

BY H. T. STANTON, F.R.S.

This most interesting fact, the re-discovery of an insect, which, though described with great minuteness in 1750, has always subsequently escaped detection, stands I believe perfectly unique in the history of our science. Four generations had passed away, but still the magician whose wand was to wake the Sleeping Beauty from her prolonged slumbers had not appeared.

The insect had only been observed at Malta, and in the heat of the summer season; but it was reasonable to expect that it might occur in other parts of Italy, and in the South of France;—and possible that it might occur at a more temperate season.

The larvæ of *Antispila Rivillei* were found the first week in October, 1871, by the Hon. Beatrice de Grey (sister of Lord Walsingham, who is now collecting the Micro-Lepidoptera of California and Oregon) in a vineyard at Massa di Carrara, in Italy; and, recognising at once the insect from its peculiar characters, some specimens were thoughtfully forwarded to me for identification.

Unless there are two species of the genus *Antispila* on the vine (as we have two in England on the dogwood, *Cornus sanguinea*), there seems no reason to doubt but that these are the larvæ of the long lost insect, first noticed in the 'Mémoires de Mathématique et de Physique présentés à l'Académie Royale des Sciences,' vol. I, p. 177 (1750), and this notice subsequently reproduced by Goeze, in the 'Naturforscher,' Stück 4, p. 16 (1774), by Fuessly in the 'Magazin der Entomologie,' Band II, p. 167 (1779), and then by myself first in the 'Transactions of the Entomological Society of London,' second series,

vol. III, p. 87 (1855), secondly in the 'Annales de la Société Entomologique de France,' 1855, p. 211, and thirdly in the 'Tineina of Southern Europe,' p. 309 (1869).

I was from home when these larvæ reached this country, but my friend, Mr. J. W. Douglas, kindly attended to them in my absence, and has made the following description:

"*Larva* $1\frac{1}{4}$ lines long. Head deeply inserted in the second segment, which is the widest of all, both brown; then the body is gradually and slightly smaller to the apex; the segments pale amber-yellow.

"*Mine* long, always starting from a rib, much contorted, often at first in long reaches, ending always in a large blotch; "frass" continuous, black.

"*Cocoon* oval, formed between the cuticles, which are eaten through all round the circumference at one end, but maintained *in situ* by a silken net work of filaments."

The mine differs essentially from those of the dogwood feeders, *Antispila Pfeifferella* and *Treitschkiella*, in commencing with a slender, linear, Nepticuliform gallery: neither is the ultimate blotch as large as in the dogwood species; this probably is in a great measure owing to the vine leaf being so much thicker than a dogwood leaf, and consequently more sustenance is afforded in a smaller sized excavated blotch; but the most singular thing is the small size of the oval cases or cocoons cut out by the larvæ; these are considerably smaller than those of the smallest dogwood species, *Antispila Treitschkiella*, and much smaller than those figured in 1750 (reproduced in my volume of the 'Tineina of Southern Europe'). The cases of the vine feeder all bear longitudinal ridges, which we do not perceive in the cases of the dogwood feeders.

These October larvæ of *Antispila Rivillei* will probably not produce the imago till May or June; and there will be some anxiety, lest, as is so often the case with similar larvæ, they may all perish during the winter months.

By a singular coincidence, at the very time I was pondering over the extraordinary re-discovery of this larva, I received from Lord Walsingham some aspen leaves from Fort Klamath, Oregon, so maltreated by the larvæ of some unknown species of *Antispila* (or *Aspidisca*) that their appearance is most singular. It would really seem as if the problem had been:—"Given an aspen leaf, to find the greatest number of oval cases that can be punched out of it."

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 10).^{no complet}

BY H. W. BATES, F. Z. S.

Genus STOLONIS.

Motschoulsky, Bull. Moscou, 1865, No. 4, p. 230.

In general form, the species of this genus resemble certain *Anchomeni* (e. g., *A. albipes*), being of slender figure and glossy black or pitchy colours; but the three dilated joints of the anterior male tarsi being obliquely produced interiorly betray a much closer relationship with *Loxandrus*. This character, although the most important one offered by these insects, was omitted by Motschoulsky. The genus consists of a considerable number of species, recognizable by the abruptly rounded thorax, generally constricted into a narrow waist at the base, and by the white colour of a portion of the antennæ, a feature common to many distinct genera of *Carabidæ* from tropical America. Like the *Loxandri*, they have a single large puncture on the third interstice of the elytra, and no short scutellar stria. The anterior tibiæ in some of the species are quite as slender as in the typical *Anchomeninæ*; a character which would bring them within that sub-family, according to the system of Erichson and Lacordaire. The mentum has an obtuse tooth in the small, shallow emargination; the ligula is triangular, with the upper edge broad and straight, furnished with two bristles, and surpassed in length by the narrow membranous paraglossæ. The palpi and three basal joints of the antennæ are naked. The genus is very closely allied to *Oxycrepis*, Reiche,* in which the elytra are thickly punctured and pubescent. This character suggests a relationship with the *Lachnophorinæ*; and, in fact, one species, at least, of *Stolonis* (*Anchomenus elegans*, Dej.) was placed in *Anchonoderus* by Reiche; both genera, however, differ from the *Lachnophorinæ* in their naked palpi and the three basal joints of their antennæ, besides their oblique fore tarsi in the ♂. *Oxycrepis* is distinguished from *Stolonis* by the ovate thorax, not constricted or much narrowed behind, as well as by the densely punctured elytra.

The species of *Stolonis* are found under decayed leaves, &c., in moist situations, and the genus constitutes one of the characteristic forms of *Carabidæ* of tropical America.

STOLONIS NOTULA, Motsch., loc. cit., Venezuela.

STOLONIS FULVOSTIGMA, n. sp.

St. notulæ (Motsch.) *similis*, at major; *piceo-nigra*, *iridescens*; *capite lævi*, *pone oculos modice angustato*, *oculis prominulis*; *thorace antice lato*, *rotundato*, *basi con-*

**Oxycrepis leucocera*, Reiche, described from Venezuela, appears to occur also at Bahia in Brazil, a specimen I obtained from Mr. Edwyn Reed's collection made in that province agreeing precisely with Reiche's description.

stricto, ibique sine margine distincto laterali, basi suprâ haud profunde punctato, foveâ utrinque vix impressâ; elytris profunde striatis, striis (apice exceptis) lateraliter punctatis, suturâ prope apicem maculâ communi rotundatâ, fulvâ, notatâ, marginibus deflexis rufo-piceis; antennarum articulis 1—3 rufo-testaceis, 4—6 et 9—11 vel 10—11 nigris, 7—9 vel 7—10 albis; palpis, labro pedibusque rufo-testaceis; femoribus postice medio nigris; corpore subtus lævi. Long. $4\frac{1}{4}$ lin.

Evidently closely allied to *St. notula*, Motsch., from Venezuela, which is, however, much smaller ($3\frac{1}{2}$ lin.). Motschoulsky well describes the striæ as "*lateraliter punctatis*," i. e., the punctures lie on the outer side of each stria, so as to crenulate the next interstice: a character which is shown also by the *Lachnophori*.

Rio Janeiro; taken by the late Mr. Squires.

STOLONIS LEUCOTELA, n. sp.

St. fulvostigmati proxime affinis, differt antennarum articulis 7—11 albis; gracilior, nigra, thorace antice valde rotundato, postice coarctato, marginibus lateralibus prope basin distinctis tenuibus, basi grosse parce punctato; elytris fortiter striatis, striis minus grosse basin versus lateraliter punctatis, marginibus deflexis rufo-piceis, suturâ prope apicem maculâ communi rotundatâ, fulvâ, notatâ; antennarum articulis 1—2 piceo-rufis, 3—6 nigris, 7—11 albis; labro palpisque rufo-testaceis; pedibus flavo-testaceis, femoribus postice medio nigris; corpore subtus lævi, nigro, nitido.

Long. $3\frac{1}{2}$ lin.

St. Catherine, S. Brazil; from M. Meyer-Dür's collection.

STOLONIS LEISTOIDES, n. sp.

Nigro-picea, iridescens, elytris immaculatis; antennarum articulis 1—3 rufo-piceis, 7—9 decimique dimidio basali albis, reliquis fuscis, labro palpisque rufo-testaceis, pedibus albo-testaceis; capite parvo, oculis magis prominulis; thorace antice valde rotundato, postice coarctato, ibique sine margine laterali, sulco transversali prope basin punctulato; elytris fortiter striatis, striis lateraliter punctatis; corpore subtus piceo-nigro.

Long. $3\frac{3}{4}$ —4 lin.

Resembles much the *Leisti* in general outline, and is distinguished from allied species by the transverse depression close to the basal margin of the thorax, which leaves a more or less distinct raised basal rim.

Ega and R. Tapajos, Amazons.

STOLONIS LÆVICOLLIS, n. sp.

St. leistoidi proxime affinis, differt thorace basi suprâ plano, in foveis solùm pauciter punctato; elytris suturâ postice marginibusque deflexis rufo-piceis; thorace breviori, antice magis abrupte angustato. [Antennæ desunt.]

Long. $3\frac{1}{2}$ lin.

Lower Amazons; one specimen.

STOLONIS APICATA, n. sp.

Minus elongata, sed robusta; picea, iridescens; thorace antice rotundato, postice coarctato, ibique sine margine laterali, basi suprâ passim punctato; elytris fortiter

striatis, striis fortiter lateraliter punctatis, interstitiis convexis, marginibus deflexi. abdomineque rufo-piceis; antennarum articulis 1—3 rufo-piceis, 4—6 et 11 nigris, 7—10 albis; labro, epistomate, palpisque rufo-testaceis; pedibus flavo-testaceis.

Long. 3 lin.

Ega, Amazons.

STOLONIS ELEGANS.

Anchomenus elegans, Dej., Spec. Gen., v, p. 725.

Anchonoderus id., Reiche, Rev. Zool., 1843, p. 39.

Baron Chaudoir, the possessor of Dejean's types, and whose opinion on such a subject otherwise is final, informs me that this species belongs to *Stolonis*.

New Granada, near Carthagena.

STOLONIS GRACILIS, n. sp.

Minor, gracilior, thorace quam in cognatis paulo angustiore, postice paulo minus subito coarctato; nigro-picea, iridescens, thoracis margine laterali ad basin continuato, basi pauciter grosse punctato; elytrorum suturâ postice margineque laterali deflexo fulvo-piceis; antennarum articulis 1—3 rufo-piceis, 4—6, 7i dividio, et 11 nigris, reliquis albis, pedibus flavo-testaceis; oris partibus rufo-testaceis. Long. $2\frac{3}{4}$ lin.

Doubtless closely allied to *St. elegans*, to which Dejean ascribes somewhat differently coloured antennæ. The thorax is much less perfectly round than in *St. apicata*, *leistoides*, *fulvostigma*, &c., being rather more gradually narrowed anteriorly and posteriorly; and the lateral rim forms a small projecting angle at the commencement of the constricted base.

R. Tapajos.

STOLONIS OVATICOLLIS, n. sp.

Gracilis, angustata, nigra, iridescens; capite pone oculos gradatim attenuato, deinde in collum distinctum constricto; thorace ovato, postice usque ad basin angustato, sine stricturâ, margine laterali ante basin dentiformi, magis reflexo, angulato, basi (foveis pauciter punctatis exceptis) lævi; elytris fortiter punctato-striatis; oris partibus rufo-testaceis; antennarum articulis 1—3 rufo-testaceis, 4—7 nigris, 8—11 albis; pedibus flavo-testaceis.

Long. $3-3\frac{1}{4}$ lin.

Also closely allied, apparently, to *St. elegans*, from which it differs in showing no distinct red tinge or mark along the posterior part of the suture. The constriction of the neck forms a transverse groove.

Ega.

ANCHOMENUS DIMIDIATICORNIS, Dej.

This species, according to its description, would seem to belong to *Stolonis*; but in the character of its alternate interstices being punctured it differs from all the species known to me.

Kentish Town: November, 1871.

DESCRIPTION OF A NEW SPECIES OF SYNCALYPTA, FROM GREAT BRITAIN.

BY D. SHARP, M.B.

SYNCALYPTA HIRSUTA, nov. spec. *Breviter sub-orata, convexa, nigra, sub-squamulosa, setis griseis, erectis, clavatis, longioribus adspersa; elytris striatis, striis obscure punctatis, suturali postice profundâ; antennis pedibusque obscure rufis.* Long. $1\frac{1}{4}$ lin.

This *Syncalypta* is so closely allied to *S. setigera*, that I shall content myself with adding to the above diagnosis a notice of the differences between the two. They are of about the same size and form, but the erect setæ with which *S. hirsuta* is clothed are longer, thinner, less clubbed, and lighter in colour than those of *setigera*; the depressed scales of the elytra are much less numerous and distinct than in *setigera*, and not variegated, as in that species; but this may, perhaps, be owing to the fact that none of the individuals of *S. hirsuta* from which my description is made are in good condition; the depressed scale-like hairs with which the prothorax is clothed are much longer in *hirsuta* than in *setigera*; and, when the insects are cleaned and denuded of their clothing, it is seen that the punctuation of the thorax is much coarser in *hirsuta* than in the other species: the antennæ and legs are lighter in colour in *hirsuta*.

In both these species the striæ of the elytra are peculiar, and consist of lines of elongate punctures, placed so close one behind another that the separation between each is but little apparent.

S. hirsuta appears to be widely distributed in the South of England, though rare in collections: *setigera* I have only seen from the neighbourhood of Dumfries.

Stephens describes two large species of *Syncalypta* as found in England, *maritima* and *setiger*: neither of the descriptions is applicable to *S. hirsuta*, but both appear to me to appertain to *S. setigera*.

Eccles, Thornhill, Dumfries:

November, 1871.

NEW BRITISH TRICHOPTERYGIA (WITH DIAGNOSES OF NEW SPECIES).

BY THE REV. A. MATTHEWS, M.A.

The following *Trichopterygia* must be added to the British List; but, as a full description of each species will very shortly be published in my Monograph of the Section, I will not at present do more than give a few of their principal diagnostic characters.

PTENIDIUM KRAATZII, n. s.

Differs from *Pt. formicetorum* in its longer and narrower shape, smaller size, and much deeper sculpture, especially on the head and thorax.

I have two specimens of this insect, taken by the late Mr. Foxcroft in Scotland.

PTENIDIUM ATOMAROIDES, Mots.

This species is easily distinguished from *Pt. evanescens* by the smaller size of its head and thorax, and much longer and broader elytra.

I received a *Ptenidium* some time ago from Mr. Crotch, taken by himself (I believe near Brandon), which clearly belongs to this species.

TRICHOPTERYX FUSCULA, n. s.

L. c. $\frac{1}{16}$ lin. Short, quadrate, covered with long brown hairs. Differs from *T. brevis* in its parallel form and long slender antennæ.

This peculiar and distinct species I found some time ago near Gumley.

TRICHOPTERYX LONGULA, n. s.

Differs from *T. picicornis* in its shorter and narrower thorax, longer and more slender antennæ, and closer and finer sculpture.

Two specimens of this insect have been taken by myself in this part of the kingdom, and two others by Mr. Wollaston near Tonbridge.

TRICHOPTERYX RIVULARIS, Allibert.

Differs from *T. Montandonii* in its more elongate form, longer thorax, elytra more contracted at their apex, and disposition of the sculpture.

I have long hesitated to separate this and some other allied forms from *T. Montandonii*; but am now convinced that to preserve any specific uniformity their separation is inevitable. *T. rivularis* is not uncommon in this country.

TRICHOPTERYX EDITHIA, n. s.

L. c. $\frac{1}{16}$ lin. Elongate, convex, griseous-brown, covered with long sericeous pale hairs, head large and wide, eyes not prominent, antennæ very long and slender, bright yellow; thorax moderate, sub-quadrate, with the sides much rounded, widest near the middle, covered with small tubercles irregularly arranged, with their interstices shining and deeply reticulate, posterior margin depressed and slightly reflexed, with its angles produced and acute; elytra rather longer than the

head and thorax united, oval, much narrower than the thorax at the shoulders, widest at the middle, with their apex moderately rounded, deeply asperate in close wavy rows; legs long, slender, bright yellow.

I give the above short description of this very distinct and pretty species in order to assert my claim to priority. I have named it *Edithia* in honour of its captor, Mrs. Wollaston, who, with the assistance of Mr. Wollaston, made a numerous and very interesting collection of these insects, in the neighbourhood of Tonbridge, during the past summer.

TRICHOPTERYX CANTIANA, n. s.

Differs from *T. lata* in having its thorax much less dilated at the sides, and the antennæ rather shorter, more robust, and entirely black, also in its deep black colour and very short pubescence.

Several specimens of this insect were taken by Mr. and Mrs. Wollaston at Tonbridge.

Gumley: November, 1871.

NOTES ON THE ECONOMY OF SOME BRITISH SPECIES OF PTEROPHORIDÆ (ISODACTYLUS, TEUCRII, PLAGIODACTYLUS, AND LIENIGIANUS).

BY C. G. BARRETT, ASSISTED BY W. BUCKLER.

PTEROPHORUS (PLATYPTILUS) ISODACTYLUS.

In the autumn of last year, I picked up a few specimens of *Pterophorus isodactylus* in a marsh by the river side, and therefore looked over the place early this summer for plants of some species of *Senecio*.

The grass, however, was rank and growing rapidly, and *Senecio* hard to find, and it was not till June 21st that, extending my researches into an unexplored corner, I found an ugly, scrubby-looking species—*Senecio aquaticus*—growing in some plenty. My search for the larva was, however, cut quickly short by the appearance of a specimen of the moth already out, and then and afterwards I secured a good many, the *females* being so exceedingly sluggish, that I only took two specimens of that sex. I had, therefore, to wait for the second brood to make the acquaintance of the larva; but, according to the contrary nature of things in general, just as the moths must have laid their eggs, the marsh was mowed, and, although the farmer had distinctly promised to leave a patch of the plants for me, the whole of them were cut down. This was discouraging enough, as the eggs had not had time to hatch, and *must* have been nearly all destroyed, whereas, had the larvæ been feeding, some of them would have been sure to find their way from the withering plants to portions which remained growing.

But, not to be beaten without an effort, I went to work on August 10th, and after a long search found one larva mining a shoot of the ragwort, and sent it at once to Mr. Buckler. A fortnight later, I found several larvæ and a few pupæ, from which the moths began to emerge on August 20th.

The larva of the second brood, when young, mines one of the smaller shoots of *Senecio aquaticus* near the buds, afterwards it crawls further down, entering one of the larger branches at the axil of a leaf (frequently devouring the tender side shoot), and bores down the interior, feeding on the pith till nearly full grown, when it again deserts its burrow, and proceeds to the thick main stem of the plant, which it enters, and there feeds up, hollowing out a space in which to assume the pupa state. In every case a round hole is left for the extrusion of excrement, and, in the final burrow, this is placed exactly against the head of the pupa, so that there is no difficulty about the egress of the perfect insect. This pupa is angular and destitute of hairs, like those of the allied species (*Trigonodactylus*, *Ochrodactylus*, &c.), but lies perfectly free in the burrow, the anal segment not being attached to the usual button of silk.

The larvæ of the first brood must feed in May, in the young shoots, then just beginning to grow, the perfect insect appears in the latter part of June, and again in August and September.

The larva, when full-grown, is about three-eighths of an inch in length, rather thick and plump, tapering much just at each end, the head small, the legs short and placed much under the body, the skin smooth, shining, and pellucid; it is of a watery, greenish tint, showing a dark greenish dorsal vessel; the sub-dorsal stripe is also darker green than the ground colour, and this is bordered above by an opaque whitish stripe, which lies beneath the skin, and shows partially through its glossy surface; another such faint whitish stripe shows through along the side, and below that is another, somewhat inflated, on which are the spiracles; the head is black, and so also is a narrow plate across the middle of the back of the second segment, which is divided in the centre by a thin line of the pale ground colour; the anterior legs are black; the tubercular dots above are small and black, those along the spiracular region are rather larger, and those on the front part of the thirteenth segment are very much larger still; a black plate is on the anal flap: it is noteworthy that such tubercular dot in this *Pterophorus* has but a single hair. The pupa is smooth, nearly three-eighths of an inch in length; the wing and leg cases meeting in a point low down the abdomen, and in close contact with it; in colour, it is pale whitish-ochreous, the abdomen a little deeper tinted, it is generally striped and marked with brown, particularly on the head and back of the thorax; the dorsal marking is a series of brown acute triangles. — W. B.

The diversity in the habits of the larvæ and pupæ of the *Pterophoridae* is very great. *Ochrodactylus* (*Bertrami*) devours the hearts of the shoots of *Achillea Ptarmica* and *millefolium*, eating down into the stem, and assumes the pupa state on the plant. *Isodactylus* lives as larva and pupa *within* the stems of *Senecio*. *Trigonodactylus* devours the middle of the seed-heads of *Tussilago*, drawing together the wings of the seeds so as to form a sort of cocoon, in which it assumes the pupa state. *Teucarii* withers the young shoot of *Teucrium*, to feed on the drooping leaves. *Bipunctidactylus*, I am informed, feeds in the flowers of *Scabiosa succisa*, and *Loewii* on seeds of *Erythraea centaureum*. *Plagiodactylus* hollows out shoots of scabious, en-

tering them at the side, but becomes a pupa externally. *Fuscus* eats off the buds of *Veronica chamaedrys*, and also becomes a pupa on the plant. *Pterodactylus* eats the flowers of *Convolvulus*. *Licnigianus* gnaws the leaves of *Artemisia*, leaving one membrane and rolling up the other, also making itself a tent of the leaf. *Microdactylus* feeds on the flowers of *Hepatica cannabinum*, but enters the stem to become a pupa. *Gabactodactylus* eats holes in the leaves of *Arctium lappa*, but rolls back all the woolly covering of the leaf to the edge of the hole as it eats, and assumes the pupa state close to the surface of the under-side in one of the deep depressions formed by the union of the ribs; and *pentadactylus* devotes itself to eating off the young shoots and leaves of *Conocylus spium*, just as it is making a start to smother our fruit bushes with its luxuriance. There is all this variation in the few species with which I am acquainted: it would be interesting to know something of the habits of the rest.

PTEROPHORUS (OXYPTILUS) TEUCRII.

As *Pterophorus (Oxyptilus) teucris* is only single-brooded, it allows itself more leisure for feeding than some of its congeners, and may be found commonly in the larva state from the middle of May till the end of June.

The mode of life of this larva is sufficiently curious. It gnaws a deep round hole in the side of the stem of a young shoot of *Teucrium scorodonia*, stopping the flow of sap, and causing it to droop, then crawls (slowly enough) to the heart and eats portions of the younger leaves, biting them clean through like ordinary larvæ, and never, I believe, gnawing the surface of the leaf like some of its congeners, nor entering the shoot like others. It does not confine itself to one shoot, but, after eating bits of several leaves, goes to another, which it causes to droop in the same way. In wet weather the shoots will recover and raise themselves, but if the sun is hot and the weather dry, they wither, and serve (like the shoots of spindle when mined by the larva of *Hyponomeuta plumbella*) as signal flags to show where a larva is to be found.

In confinement, the larva makes no attempt to wither the shoot, but eats the young and full-grown leaves indifferently. Its principal object is, evidently, shelter from the sun, and it is so sluggish that it can hardly ever be seen to move when light is upon it. It is liable to a queer disease, which causes it to become distended, and die in the form of a little hairy bladder. Great numbers die in this way, and from some of them ichneumonons emerge, but I think by no means from all.

The full-grown larva is five lines in length, cylindrical, tapering a little behind, and a little in front from the second segment to the head, which is a trifle smaller and rounded; the segments appear very plump from the divisions being deeply cut; it is of a pale glaucous-green colour, with dorsal and sub-dorsal lines of full green; the tubercles are brown, bearing fascicles of numerous white hairs, those on the thoracic segments very spreading, and it is altogether very hairy.—W. B.

The pupa-state seems to be assumed under any convenient object close to the ground, as the hairy pupa is not often to be found on the plants.

I have made these notes upon the larva of *teucris* because its peculiar habits interested me: but the merit of its discovery, in the first instance, belongs to Mr. N. Greening, of Warrington, who has already (E. M. M. iv pp. 16 and 39) given a description (under the name of *hieracii*) differing very slightly from my own.

PTEROPHORUS (MIMLEOPTILUS) PLAGIODACTYLUS.

On May 19th last, I went over to my favourite chalk-pit, determined, if possible, to make the acquaintance of the larva of *Pterophorus plagiodactylus*. The sloping-banks of the pit are covered with a profusion of wild flowers, and among them *Scabiosa columbaria* and *arvensis* grow in abundance.

At this time, these plants were throwing up strong shoots, and growing so rapidly, that the infested portions of the plant were almost directly covered, and concealed by the healthy shoots, so that I had no little difficulty in discovering the whereabouts of the larva.

The mode of life is this:—the larva gnaws a hole in the side of a young shoot, and, working up, devours its anterior substance, proceeding from shoot to shoot till full-fed, when it attaches itself to the plant by the anal segment, and becomes an angular, bright green pupa, beautifully edged and pointed off with pink, and entirely without hairs. The favourite food-plant is *Scabiosa columbaria*, but *S. arvensis* serves as a substitute, and in the fens the moth is common among *S. succisa*.

This species is double-brooded, appearing in May and June, and again in August, the larva feeding in May and doubtless again in July, but in the latter case the mode of feeding has still to be observed, as the plants are then well grown.

The larva of *plagiodactylus*, when full-grown, is about five lines in length, of moderate proportion, neither stout or slender, tolerably cylindrical, tapering a little posteriorly; the head rounded and rather smaller than the second segment, of a very pale colour and shining; the body is very pale olive-yellow, with a conspicuous brown dorsal line attenuated at each end, and with two faint lines along the side a little deeper than the tint of the ground colour; on the lowest line are the black spiracles each on a slight swelling; the tubercular warts are of the pale ground colour and furnished with rather long curved whitish hairs; the head and other parts of the body emit short hairs.—W. B.

My friend Mr. Buckler has figured the larva of this and other plumes, and has kindly consented to describe them for me.

PTEROPHORUS (LEIOPTILUS) LIENIGIANUS.

Early in July, 1870, in a country lane some miles from Norwich, I chanced to find a plant of *Artemisia vulgaris*, the leaves of which were eaten in a fashion different to anything I had before seen, so curiously, indeed, that I could not at the time imagine to what *family* even the larva could belong, and to make the matter worse, it appeared to be quite deserted. At home I again examined the plant, but finding nothing, threw it aside, and was not a little

surprised, a few days afterwards, at finding a specimen of *Pterophorus Lienigianus* at rest on the ceiling. The riddle was therefore solved, as it was clear that the pupa had been hidden so well that I had overlooked it.

I was too busy then to go after the perfect insect, but promised myself a pilgrimage in June of the present year to look for the larva. However, on May 26th, when returning from an unsuccessful search for *Trifurcula pulverosella* in its haunt among the crab bushes in a neighbouring lane, I caught sight of a bladdery-looking leaf of *Artemisia vulgaris* which I instantly recognized, and had the exceeding satisfaction of finding the pretty little hairy larva of *Pterophorus Lienigianus* very much at home, with several more, occupying other leaves of the same plant.

This larva has the most singular mode of life of any plume larva with which I am acquainted. When young, it gnaws oblong blotches near the tips of upper leaves of the *Artemisia*, leaving the cuticle of the upper-side entire and nearly transparent, eating the parenchyma, and carefully rolling back the downy skin of the under-side to the edge of the blotch (as is done by the larva of *galactodactylus* on burdock). These blotches are seldom more than half-an-inch long, but generally there are two or three of them side by side. When about one-fourth grown, the larva moves down to a lower leaf, which it draws together, uniting the tips underneath, and carefully sewing together the edges of the segments, so as to make a secure little tent, inside which it feeds as before, only making larger blotches side by side, between the ribs of the leaf, until the greater part of the parenchyma is devoured, after which, it deserts this habitation, makes another lower down, and so on, constructing four or five tents before becoming full-grown. Then, disdaining to make use of the larval habitation as a protection for the pupa, it descends towards the ground, and becomes a hairy pupa on the lower part of the stem, or on some bit of stick or other convenient object.

The pupa has, strongly developed, the curious power (shared more or less by most of those of the *Pterophoridae*) of throwing its head back over its tail with considerable force. Thus, anything touching the anal segment is pretty certain to receive a smart rap—delivered backwards—from the head of the pupa.

Every one must have observed that when a plume emerges, the pupa bends back so as to allow the moth to use its long legs as soon as they are freed from the envelope.

The deserted tent is a curious object, with its oblong windows edged with white down, and its seams made as neatly as a spider even could do it. In the case of large leaves, only one of the divisions is made use of, the whole leaf being beyond the powers of the architect. In confinement, these larvæ, like those of *teucriti*, throw off their protective habit, and make no tent, but simply feed under the leaves in their usual fashion. Unlike *teucriti*, however, they are very easy to rear, as, with a little care, nearly every specimen produces the perfect insect.

I found larvæ feeding from time to time, from May 26th till June 20th, and by that time, the more forward specimens had begun to emerge. I have seen no indication of a second brood in the year.

The full-fed larva is little more than three-eighths of an inch in length, cylindrical, though tapering a little behind; the head a trifle smaller than the second segment, and rather rounded, greyish-brown in colour and marked with blotches of blackish-brown on the lobes and between them, and is very shining; the body is pale glaucous-green, and has a very broad dorsal stripe of darker bluish-green, through the middle of which runs an exceedingly fine pale thread of the ground colour; the thin sub-dorsal line is yellowish-white, and just above it is a whitish-grey parallel streak, all these are regularly interrupted at segmental divisions, these divisions are somewhat yellow; the spiracles are whitish ringed with brown; there is a white wart on the hinder part of the side of the third and fourth segments; all the tubercles are whitish, each bearing little fascicles of about four white silky hairs, curved and finely pointed; the ventral surface and legs a little paler than the rest of the ground colour.—W. B.

The perfect insect is rather sluggish, and retiring in its habits. It is pretty common in this neighbourhood, yet, previous to rearing it, I had taken but one specimen, and, one afternoon last July, happening to find, in the corner of a field, a lot of *Artemisia*, which had evidently been infested, I spent a considerable time in beating, kicking, and trampling the plants and neighbouring rank weeds before I could compel two specimens to skulk unwillingly out from among them.

Norwich: 11th October, 1871.

Addition of two species of Cryptophagus to the British list of Coleoptera.—I have much pleasure in calling attention to two species of the genus *Cryptophagus*, which have not yet found a place in our British catalogues. Both are described by that distinguished entomologist, M. Ch. Brisout de Barneville, in Grenier's catalogue. The first is *C. punctipennis*, Bris., allied to *pilosus*, but rather smaller, and readily distinguished by the very coarse, and somewhat distant, punctuation of the basal portion of the elytra, with are clothed with long outstanding hairs, as well as with the usual shorter pubescence. I have found this insect in the fens at Cambridge, and on the Braid Hills, Edinburgh, in each case in a kind of open shed used for storing straw. It is recorded by M. Brisout as occurring among straw at Paris.

The second species is *C. parallelus*, Bris.; an elegant species not to be confounded with any other, by reason of its narrow, elongate, and parallel form; it is also very finely punctured, and clothed with a very fine and very short pubescence. This was taken by me at Rannoch some years ago, and I have since found it in Scotch fir at the Escorial in Spain, so that it is, no doubt, connected with that tree. It is best placed between *dentatus* and *acutangulus*. A specimen given by me to Mr. Crotch was named *parallelus* for him by M. Brisout.—D. SHARP, Eccles, Thornhill, Dumfries, Nov., 1871.

Note on the occurrence of Anisotoma scita, Er., in Great Britain.—I have in my collection an *Anisotoma*, ♀, taken in flood-refuse near York by Mr. Hutchinson, which

I refer with some slight reserve to the *A. scita* of Erichson (Ins. Deutschl., iii, 70) ; Dr. Sharp also informs me that he has several Scotch specimens apparently belonging to that species, and one of which, a male, kindly given some time ago to me by him, answers to its description satisfactorily in its chief characters.

A. scita has the anterior tibiæ but slightly widened towards the apex, and is apparently most likely to be confused with small examples of *A. dubia*, in which, however, the anterior tibiæ are usually considerably dilated. This character, however, employed by Erichson as sectional, is untrustworthy at times, as in old examples the spining, &c., of the outer edge becomes abraded, and in species liable to great varieties of sexual development (as are many of this genus) individuals of the same species differ considerably in this respect. Apart from the tibial test, *A. scita* may be known from *dubia* of equal size by its thorax having its greatest width apparently at the base, instead of nearer the middle, and by the front margin having a much shallower emargination for the reception of the head.

The comparatively larger apical joint of its antennæ, the straight hinder margin of its thorax, the rounded apex of its posterior femora beneath in both sexes, and its less oblong form, at once distinguish it from *A. calcarata*, to which Erichson, though noting these wide points of divergence, chiefly likens it.

Its less perfectly oval form and the much stronger punctures of the striæ of its elytra distinguish it from *A. ovalis*. Erichson states the punctuation of its thorax to be more delicate than in *ovalis*, though his diagnosis of the latter is "*prothorace crebre punctulato*," and of *scita* "*crebre punctato*." I fail to see this character in my insects.—E. C. RYE, 10, Lower Park Field, Putney, S.W., Nov. 1871.

Note on a species of Apion new to the British lists.—During the past month, Mr. Champion and I, in a day's collecting at Mickleham, each captured, by promiscuous sweeping, an example of an *Apion*, which I think must be referred to the *A. annulipes* of Wencker (Monogr. des Apionides, p. 37 ; L'Abeille, I, p. 145). These examples, both ♀, are closely allied to *flavimanum*, Gyll., from the ♀ of which they differ in their entirely black and very much stouter legs and wider tarsi, brilliant and very finely punctulated rostrum, rather shorter prothorax, of which the punctuation is not so close, and the less dull interstices of their elytra. One of these specimens is rather larger than my largest *flavimanum* ; the other of the average size of that species.

The ♂ is described as having the antennæ testaceous, except the club, all the tibiæ marked with testaceous before the base and on the inner side, and the femora (especially the anterior) very robust.—ID.

Note on an unrecorded British species of Ceuthorhynchus.—M. Charles Brisout de Barneville, in his paper on "*Ceuthorhynchus nouveaux*," 'L'Abeille,' Vol v (published in 1869), at p. 437 describes a new species, from England only, under the name *Crotchii*, which appears hitherto to have escaped record in this country, although *C. frontalis* and *C. Dawsoni* (*pygmaeus*, Guyon, M.S.), described at p. 438 of the same work, have found a place in our lists,—before, indeed, their descriptions were published. *C. Chevrolatii*, also in our list, and in some foreign catalogues, and referred to the same author, does not appear to me to have been described at all as yet.

C. Crotchii is described as very like *versicolor*, Ch. Bris. (*quercicola*, Wat. Cat.), but differing from that species in its more depressed prothorax, of which the anterior margin is less reflexed, and in its testaceous tarsi, with smaller claws.—Id.

Note on Monotoma 4-dentata, Thoms.—Thomson, Opusc. Ent., p. 333, in describing this supposed new species, compares it only with *M. picipes*, which he states it to resemble very much in size and build, but to differ from it in its head being shorter before the antennæ, its obsolete frontal foveolæ, its rather shorter prothorax, of which the basal foveolæ are more shallow, but the lateral denticles near the base are more prominent, and its narrower and more strongly transversely rugulose elytra, of which the sides are scarcely dilated.

These differential characters are so precisely those of *M. brevicollis*, Aubé, that I can scarcely avoid concluding Thomson's insect to be identical with that species.—Id.

Addition to the description of Thyamis agilis, Rye.—Since the publication of the description of this species in Ent. M. Mag., V, p. 133 (Nov. 1868), no further examples of it have come under my notice until the end of May in the present year, when about six specimens were taken by the Rev. H. S. Gorham and Dr. Power at Bearsted, near Maidstone, off *Scrophularia aquatica*. Two others also were soon afterwards taken by the former of those gentlemen, near Staple, Kent, by promiscuous sweeping. These latter agree with my insect as described, but all the Maidstone specimens materially vary therefrom in coloration, and render an addition to my description necessary. Instead of being lurid testaceous with the under-side, head, and apex of antennæ and of posterior femora pitchy, as were all the examples formerly known to me, these (or, at least, the most fully marked of them) are entirely black beneath, with the head, scutellum and hind femora (except at the base internally) black, and with the suture of the elytra narrowly edged with black for its basal sixth, then broadly so until the apical sixth, where the black almost entirely vanishes. There is also in some of them an indeterminate pitchy patch on the lateral margin near the point where the posterior femora touch the sides. The posterior tibiæ are distinctly, and the 5 apical joints of the antennæ more or less, pitchy. The spurs of the posterior tibiæ in all the above mentioned specimens are exceedingly small and short, broad at the base, and scarcely perceptibly curved at the apex.

The coloration above described naturally causes a reference to *T. lateralis*, Ill.; but that species (which could hardly have failed to be familiar in all its phases to Herr Kutschera, who returned *T. agilis* as unknown to him) seems confined to *Verbascum*, the spurs of its posterior tibiæ are described as large and arched, its elytra have a very projecting humeral callus, with their punctuation disposed in striae on the upper half, its thorax is black in the fully coloured individuals, and red in the others, &c.

T. suturata, Foudr., found on *Verbascum thapsus* in the south of Europe, has shorter spurs than *T. lateralis*, but they are still arched; the punctuation of its thorax is almost imperceptible, and of its elytra very fine and disposed in almost straight lines in the upper half, &c.—Id.

Capture of Atomaria rimetarii at York.—Of this rare species (only hitherto taken in this country by single specimens, I believe, except by Mr Pelerin, in the north

of London) I was so fortunate as to capture about 30 examples, feeding on fungi, in company with *Rhizophagus parallelocollis*, in York Cemetery, during the past month of September.—H. HUTCHINSON, 21, St. Anne's Street, Cemetery Road, York, Nov. 1871.

Note on red Quedius "fulgidus."—I have lately taken upwards of 20 specimens of a "red fulgidus" (probably *puncticollis*, Thoms.), from decaying grass in a cow-house here, in company with hundreds of *Haploglossa præferta*, and some dozens of *Heterothops prævius*. As the red forms of so-called *fulgidus* are, when taken, generally single specimens, it is rather interesting to find more than a score in one place. It may be well to mention that there were with them very few of the common dark form (*temporalis*, Thoms.); and that the manner of running, &c., of the individuals with red elytra was decidedly different from the slow turn of the head of the darker specimens before taking their departure from the collecting paper.—EDWARD A. WATERHOUSE, Fountains' Hall, Ripon, Oct., 1871.

Note on the genus Cydnus.—In the October number of this magazine I made some remarks on the application of the generic named *Cydnus*, and expressed my opinion that it should be retained for that portion of the Fabrician genus that Mr. Dallas has denominated *Æthus*. Mr. Douglas has since kindly pointed out to me Mr. Dallas's remarks on this subject in the 'Zoological Record' for 1869, in which he shows that Fabricius specially exhibits *tristis* as the type of his genus *Cydnus*. This of course leaves no ground for dispute, except on the "communis error" principle, which I trust few will be willing to adopt. I must therefore apologize for offering a judgment on a question that I had not fully studied.—EDWARD SAUNDERS, Hillfield, Reigate, 9th November, 1871.

Note on Calopteryx Vesta (virgo, race?)—The form of *Calopteryx* with bright reddish-brown wings, mentioned under the name of *Vesta* in Mr. Doubleday's 'List of Epping Odonata' (ante p. 86), occurs here rather commonly, always in woods, so far as my experience extends, and without any specimens of the typical *virgo*. The latter I have met with but seldom, and invariably near streams.

I have hitherto only met with *one-third* of the British dragon-flies in this neighbourhood, a poor produce compared with the *two-thirds* from Epping.—J. E. FLETCHER, Pitmaston-road, St. John's, Worcester, 17th Oct., 1871.

Psocidæ injurious to Tea.—A matter has recently been brought to my notice that promises to be of considerable commercial importance. It appears that a certain quantity of Indian tea from Assam and Darjeeling has been found to be terribly infested with small insects, not, so far as I understand, actually among the tea, but collected in the angles of the leaden inner casing of the boxes. A sample of the Assam tea shown to me was full of the insects, with much whitish 'frass,' which I am not satisfied was actual tea *débris*. The insect is the too familiar *Atropos divinatoria* (*pulsatoria*) of our insect-boxes and setting boards. Possibly there is no house, warehouse, or ship in the world, absolutely free from this (to us) little pest; but its occurrence in such myriads in these tea-boxes, is, to say the least, extraordinary. As I believe the matter involves possible litigation, it is not advisable than any expression of opinion as to their origin be made here.—R. McLACHLAN, Lewisham, 4th November, 1871.

Discovery of the ♂ of Pezomachus trux, Först.—Mr. J. E. Fletcher, of Worcester, sent me in 1869 several of the ♀ of *Pezomachus trux*, Först. a large and conspicuous red and black species, not very common. With them was a ♂ winged specimen, without abdomen, and therefore indeterminable. They were bred from *Coleophora vibicella*, and there seemed every reason to believe that the ♂ and ♀ of a *Pezomachus* were here brought together. Remembering the late Mr. Walton's device for ascertaining the sexes of *Apion*, I suggested to Mr. Fletcher that, in any future experiment, if the animals were kept alive, and watched, their natural instincts would lead them to exhibit proofs of their sexual relation. Mr. Fletcher accordingly repeated the attempt in 1870, by collecting some 500 larvæ of the *Coleophora*. The result was not encouraging, as only three of the ♀ *Pezomachus* were obtained. I now quote Mr. Fletcher's letter:—"The last summer I have had somewhat better success: from 700 larvæ of the moth I obtained 8 ♂ and 8 ♀ of the *Pezomachus*. I placed the sexes together, that I might get them to pair (as you suggested); but I believe copulation did not take place. I watched them frequently for several days, and the most I discovered was that on two or three occasions a ♂ mounted on a ♀ apparently for coition, but the ♀ appeared unwilling each time." Although the positive proof of the *flagrans delictum* is wanting, yet the circumstantial evidence is too strong to admit of doubt as to the specific identity of the two forms; viz., their mutual resemblance (except as to sexual differences); their uniform appearance in company, bred from the same larvæ; and the fact that of the *Pezomachus* the ♂ has always been unknown, and of the *Hemiteles*, the ♀,—for the ♂ in question is undoubtedly the insect to which Mr. Desvignes assigned the name *Hemiteles tenuicornis*, Gr. It belongs to a small group of ♂ forms whose ♀ is unknown; and it may be conjectured that the other sex of these, as in the present instance, is to be sought in *Pezomachus*. *H. luteiventris*, Gr., is also one of these. They are more slender than the typical males of *Hemiteles*, and have the metathorax as in *Pezomachus*. Many of the males of *Pezomachus* are wholly apterous, as is well known; but the genus can only be regarded as provisional, being founded on one sex. The presence or absence of wings appears to be only a secondary character. In a former volume of this Magazine I mentioned some instances of this; to which may be added that last year I found in Corsica a specimen of *Agrotherentes abbreviator*, F., ♀, with the wings fully developed, whereby the insect is converted into a *Cryptus*.—T. A. MARSHALL, St. Albans, Oct. 31, 1871.

Capture of a Pempelia new to Britain.—It was rough weather in the New Forest on the 29th July last, and, as I had never collected in the Isle of Wight, I thought I would have a run over. When I got there, I found the weather just as bad; but still, as it was my first visit, I felt obliged to look about me. It rained, however, so hard, that I was forced to take shelter; and, whilst doing so, I suddenly caught sight of, and captured, an insect which proved on inspection to be one of the *Phycilæ*—something I had never seen before—and which, it struck me, must be, at any rate, new to Britain.

An hour's hard work produced fourteen more, but it was then time to hurry off to catch the boat. So much for an hour on the Island.

I have placed a specimen in Dr. Knaggs' hands for determination—W. E. DAVIS, Haggerston Entomological Society, Dalston, 15th November, 1871.

*Occurrence of a Pempelia new to Britain (P. albariella, Zeller).—*A pair of this striking *Pempelia* were yesterday shown to me by Mr. W. E. Davis, who informed me that he has during the past season secured fifteen examples of it in the Isle of Wight. He kindly entrusted one to my care for determination. With the assistance of my friend Mr. Stainton, I find that Mr. Davis' insect is referable to the species above named, described by Prof. Zeller in the 'Isis' (1846, p. 785). Perhaps the following description, which I have drawn up from an examination of Mr. Davis' specimen, may assist our readers.

Pempelia albariella. General facies that of *P. palumbella*. *Antennæ* of the male setaceous, with a dilatation near their bases, on the upper side of which is arranged a cluster of blackish scales. *Palpi* with ascending curve, grey at their bases, blackish towards their tips, grey again at the tips. *Thorax* fuscous-greyish, the patagia having, towards their anterior portions, a few black scales. *Abdomen* fuscous-greyish, paler at the basal segments.

Fore-wings fuscous-greyish, whitish along the inner margin, especially towards the base of the wing; before the first line is a patch, somewhat circular in shape, composed of a cluster of raised black scales; first line blackish, bordered internally with ochreous-brown, angulated, starting obliquely from the junction of the basal and middle thirds of the costa: in the space between the first and second lines are three whitish streaks, the lower two being interrupted in the middle by the ground colour so as to form four short, whitish dashes: the upper extends along the discal cell, becoming slightly dilated at the disc, where a small black dot, composed of raised scales, is conspicuous; above this dot, and about midway between it and the costa, is another minute dot: the second line is blackish, irregularly sinuous, and bordered with ochreous-brown towards the apical margin (it is nearer the hind margin than in *P. palumbella*, and not so sharply angulated); towards the apex is a whitish patch, and there are some others, very small, below it along the apical margin, which terminates with a thin, interrupted, blackish line; cilia greyish-fuscous.

Hind-wings shining, fuscous-grey, margined by a double dusky line; cilia ochreous-grey.

Female similar, but without the "knot-horn."

P. albariella is placed by Dr. Staudinger between *palumbella* and *obductella*. It is more nearly allied to the former, and is a very local and scarce insect abroad, its only recorded habitats being Hungary and "Amasia and Tokat" (in the north-east of Asia Minor).—H. GUARD KNAGGS, Kentish Town, Nov. 16th, 1871.

Natural History of Gymnancylus canella.—On the 16th of September, 1869, I was on the seashore during a gale of wind, and chancing to look at a shoot of *Salsola Kali*, which still protruded an inch or two above the rapidly accumulating sand, I saw a small larva blown off from it; this I immediately picked up, but my attempts to look for another were at that time entirely frustrated by the blinding sand-drift.

However, my solitary captive was contented to feed up on the little piece of *Salsola* which I brought home with it, and in a few days became a pupa; the perfect insect appeared in July, 1870, and was named for me by Mr. H. Doubleday with his usual kindness; and as he at the same time told me that the species was

not as yet common in British collections, I thought that some account of its larval state might not be unacceptable, and for this purpose have now put together the results of my investigations carried on during the present year.

The egg state I have not yet observed, and will not obtrude any guess as to *when* or *where* it is laid; the young larva, when less than one quarter of its full growth, mines within the stem of *Salsola Kali*, generally in the side shoots; but when it has reached half growth, it seems to change its abode, and to go outside and attack the unripe seeds, and then setting out from the cavity thus made, to burrow into the main stem, where it continues to feed in concealment until nearly fully grown: during this period of its existence its presence may be detected in the following manner: it protects the entrance hole of its burrow with a few exceedingly fine silk threads, and should a rainy day be succeeded by a high wind, these threads will retain many particles of sand blown over them whilst yet damp, and will thus become much more conspicuous than when in their more usual condition.

When the larva is near its full growth, it ceases to mine, and coming outside weaves for itself a delicate cylindrical web, in which it lies, often, however, changing its position, and sometimes trusting for protection only to its resemblance in colour to the stem on which it lies stretched out; when once in its web, it is not easily dislodged, and if driven out, still hangs on by a short thread, and soon returns again if not further disturbed. When full grown it enters the sand, and there constructs a cocoon of the surrounding particles, sometimes attaching it to a stone.

The youngest example of the larva, that I found, was less than a quarter of an inch long; of a pale semi-transparent glaucous green colour, with a black head and plate behind it. With growth the colour changes to an opaque ochreous-green, or to an olive-green, sometimes to a reddish-grey, the black head and plate continuing as long as the larva mines within the plant.

The full grown larva is five-eighths of an inch in length, slender, tapering from the back of the second segment to the head, which is partly retracted within it; the second segment is quite as long as any of the others; the body tapers also a little gradually from the tenth to the anal tip; on the thoracic segments there are deeply defined wrinkles, but on the others there are only one deep subdividing wrinkle, and another very slight one near the segmental division; all the legs small, and well under the body, which is cylindrical though just a trifle flattened on the back and belly. In colour the head is pale brownish-ochreous, marked on each lobe more or less with blackish-brown, the plate on the second segment is shining, and often faintly edged at the side with a slight streak of blackish, and is generally rather more inclining to ochreous, but is otherwise similar to the rest of the body in markings; the ground colour is generally of a glaucous green tint, deeper on the back and sides, and paler on the belly and legs; the dorsal line is a deep pink, or dark green, very faintly edged with a fine line of paler green than the ground colour; the sub-dorsal line is distinctly paler whitish-green, the line just above the spiracles is similar, and the space between them is a broad stripe of glaucous-green, darker than the ground; just beneath the sub-dorsal line, on the third and twelfth segments, is an ocellated spot of pale flesh-colour encircled with black; the minute spiracles are of the ground colour delicately outlined with brown; the tubercular dots are brown, but are scarcely visible without the help of a lens, nor are the fine

longish hairs which grow from them, and which seem to be more numerous at each end of the body. Varieties occur, in which the whole of the back has a slight pinkish tinge; others are darker, and of a reddish-grey colour; but when mature, all assume rather a pale ochreous-green tint.

The cocoon when free in the sand is half-an-inch in length, ovate in shape, dumpy, irregularly rounded at one end and a little pointed at the other; it is composed of grains of sand spun together, and is smoothly lined inside with silk; when the cocoon is attached to a stone, it is about five-eighths of an inch or a little more in length, but the ends rounded and of uniform size tapered off close to the surface of the stone. The pupa is about three-eighths of an inch in length, rather slender and smooth, but with no peculiarity of form, save that the tip of the abdomen is rounded off, and the wing cases rather long; it is of a pale greenish-ochreous tint, the wing-covers green, and the whole surface rather shining.—WM. BUCKLER, Emsworth, September 18th, 1871.

Natural history of Phibalapteryx lapidata.—In October, 1870, I received through Mr. Buckler, some eggs of this species, which had been obtained by Mr. S. R. Fetherstonhaugh from a moth captured by him in Ireland. Not knowing when to expect the larvæ, I kept a portion of the eggs in a pill-box, and put the rest out doors on some moss. The former soon changed colour, but shrivelled up without producing anything; the latter remained without change till the beginning of May, 1871, when the larvæ appeared in the course of the first week. At first, I could not tell what food to give them, but, luckily, before I had lost all, I thought of trying *Clematis*, and on this I succeeded in getting three of them to feed. Of this trio, one died almost immediately, another fed on till the end of June, and died, whilst the third about the same time became a pupa. The moth, however, died without emerging, although it was so far developed that the markings of the wings could be plainly distinguished on removing the pupa-case.

I am able therefore to offer some descriptions of the earlier stages, but the question as to the proper food plant remains to be settled; the moths seem to affect coarse grass and rushes, and *Galium verum* I understand grows abundantly where they have been taken by Mr. Fetherstonhaugh.

The egg is of a long oval outline, one end blunter than the other, flattened, and with a depression on the upper surface; the shell covered all over with very faint pentagonal net work; colour yellow, changing just at last to olive. The young larva is smooth, slender, tapering, pale ochreous, with brownish dorsal and sub-dorsal lines. After it begins to feed the central part of the body becomes greenish; but after a moult or two, and as soon as it really begins to grow, the ground colour becomes pale greenish-grey (much like that of immature *Ph. tersata*), except on the last segments, which, with the belly, are more ochreous, the dorsal line still brownish, two fine lines on the side, and a stouter one just above the spiracles.

When full grown the length is rather over seven-eighths of an inch, the figure cylindrical, no longer to be called slender, but moderately stout, and nearly uniform throughout, except the head and second segment, which taper a little, as does also the 13th; the skin smooth. The ground colour of back and sides pale whitish-yellow, the back slightly glaucous, the sides more white; the thin dorsal line

formed of greyish freckles; the sub-dorsal rather higher up than usual, formed also of greyish freckles, darkest near the head, and growing paler towards the 13th, and bearing both the dorsal tubercular dots; below on the side comes a fine greyish line, and just below that again a broader and darker stripe with still darker freckles; the spiracular region and belly are pale buff; the spiracles and all the usual dots are black; through the belly run a central, and three pairs of side lines, all composed of greyish freckles; the head grey, freckled with a darker tint of the same.

The whole appearance of the full grown larva much resembles that of an *Eubolia*.

The pupa was placed just under the surface of the fine soil, with no cocoon, but just a few threads; about one-third of an inch in length, cylindrical, and rather blunt at the ends; polished, at first of a delicate, almost golden, brown, afterwards more reddish-brown.

As Mr. Fetherstonhaugh has been fortunate enough to secure eggs again this autumn, and has kindly sent me some more, I hope to be able to verify all these observations, and probably add to them, next season.—J. HELLINS, Exeter, 14th November, 1871.

Note on Phibalapteryx lignata—Having had a further supply of the eggs of the second brood of moths, I think I have satisfied myself that the larvæ from them do not feed up before hybernation, at least when kept outdoors, exposed to the weather.—ID.

Note on the identity of Argynnis Adippe and A. Niobe.—I have mentioned in several places that, when in Switzerland, I frequently saw the males of *A. Adippe* and *A. Niobe* in pursuit of each other's partners, but I never was fortunate enough to take them *in coitu*; this summer Mr. Druce was more lucky than I, for he caught a pair of *Argynnis* in this condition, and on examining them found that they were referable to these two so-called species.—A. G. BUTLER, British Museum, 3rd Nov., 1871.

Occurrence of Deilephila euphorbiæ near Southampton.—On the 24th August I took a fine specimen of *Deilephila euphorbiæ* at rest in a private garden near Southampton.—WALTER P. WESTON, 1, Duncan Terrace, Islington, October, 1871.

Pieris Daplidice at Dover.—It may interest the readers of the "Entomologist's Monthly Magazine" to know that when at Dover, at the close of August, I had the pleasure of seeing a specimen of *Pieris Daplidice* in possession of a lad named Lewis Henry Neall, son of J. S. Neall, Esq., of Croydon, who informed me that he captured it on August 25th, at St. Margaret's, as it was resting on a thistle blossom. It was a male and in good condition.—WM. FARREN WHITE, Stonehouse Vicarage, Gloucestershire, October 20th, 1871.

Capture of Heliothis armigera and other Lepidoptera at Sidmouth.—The following list of *Lepidoptera* captured during the latter half of August and the first half of September, may be of some interest to your readers.—*Argynnis Aglaia* and *Paphia*, *Thecla quercus* (one specimen), *T. betula*, *Hesperia Actæon* (seven specimens), *Colias Edusa* (common), *Lithosia complanata*, *Acidalia promutata*, *Larentia olivata*, *Hypsipetes impluviata*, *Bryophila glandifera*, *Heliothis armigera* (three very fine specimens), *Eureora angustea*, &c., &c.—RICHARD COWPER, 3, The Residences, South Kensington Museum, 27th October, 1871.

Captures of Heliothis armigera, Sphinx convolvuli, Acherontia Atropos, &c., at Westward Ho!.—In September, my brother and I took seven specimens of *S. convolvuli*, in splendid condition, at *Petunia*, in our garden; also a specimen of *H. armigera* at geranium. Two larvæ of *A. Atropos* have been brought to us, and on *Galium verum* we found 16 larvæ of *Chærocampa porcellus*.—C. H. GOSSET, The Priory, Westward Ho!, November, 1871.

The nomenclature of Rhopalocera, as affected by the names given in Perry's 'Arcana.'—Several Butterflies are named and figured in this work, and some of these directly affect synonymy. I herewith append a List of those cases:—

<i>Papilio Dcmosthenes</i> ,	Perry (published August, 1810)	=	<i>Caligo Inachis</i> .
„ <i>Phalæna</i> ,	„ („ October, 1810)	=	<i>Heliconius Phyllis</i> .
„ <i>cæruleus</i> ,	„ („ Dec., 1811)	=	<i>Morpho Anaxibia</i> , var. (Brazilian type).
„ <i>Catenarius</i> ,	„ („ Mar. 1st, 1811)	=	<i>Morpho Epistrophis</i> .
„ <i>volcanica</i> ,	„ („ Sept. 1st, 1811)	=	<i>Callidryas Larra</i> , ♀.

—A. G. BUTLER, British Museum, 24th October, 1871.

Luminosity of Fulgora (extract from Perry's 'Arcana').—I have found the following interesting remarks in Perry's 'Arcana,' an old and rare book, kindly lent to me by Mr. Janson, and I think they are worth reprinting, as additional evidence in favour of the luminosity of the Lantern flies. "The *Fulgora candelaria*. A "native of China, the trunk of a yellow colour, turned upwards at the end, and "rounded; the upper wings green, streaked with beautiful veins of yellow; the "under wings of yellow, edged with black. There is an agreeable contrast in the "shades and tints of this beautiful insect; but it is impossible to conceive what "the effect of its light must be, except in its native country, as it loses its phos- "phoric effect when dried. Travellers who have visited China may be supposed to "have exaggerated its effects, when they inform us that the Indians perform their "journeys by night, carrying one of them fastened to the foot, and one in each hand, "by this means making all other light unnecessary. This insect undoubtedly has "light sufficient for its own purposes, the acquirement of its proper food, or the "pursuit of its favourite mate; but of its uses to man we can find no such opinion, "as Monsieur Lesser has figured forth in his 'Théologie des Insectes,' who would "persuade us that the natives use no other light in their houses than this small "phosphoric animal." The species is figured by Perry.—Id.

[It appears to us that Perry's notice affords no additional evidence whatever, it being merely a re-iteration of 'Travellers' Tales.' If *Fulgora* be luminous, then it must studiously turn off its 'bull's eye' in the presence of all the modern travelling scientific naturalists who have made special search for its lamp; and, having arrived at this stage of development, we anticipate that, by a process of 'natural selection,' it will eventually lose all luminous power and attributes, having found that there is no truth in the celebrated motto '*ex luce lucellum*.'—EDS.]

Review:

THE MICROGRAPHIC DICTIONARY, by J. W. GRIFFITH, M.D., and ARTHUR HENFREY, F.R.S., &c.; third edition edited by J. W. GRIFFITH, the Rev. J. M. BERKELEY, and T. RUPERT JONES. London, John Van Voorst.

We have before us Parts 1 and 2 of the new edition of this standard work. To the entomologist, who must constantly make the microscope subservient to his investigations, it will prove of great value, more especially the instructions in manipulation conveyed in the introductory portion. To the microscopist *pur et simple*, an individual towards whom we confess to a deficiency in our bump of veneration, it is indispensable. The work is illustrated by many, partly coloured, plates, and by innumerable woodcuts, and the "getting up" is creditable alike to editors, printers, and publisher.

ENTOMOLOGICAL SOCIETY OF LONDON, 6th November, 1871.--Prof. J. O. WESTWOOD, M.A., F.L.S., Vice-President, in the Chair.

Mr. Davis exhibited a collection of beautifully preserved larvæ of *Lepidoptera* and other insects, some of these illustrating almost a complete natural history of the species.

Mr. Bond exhibited two examples of *Zygæna exulans* from Braemar, received from Dr. Buchanan White; a *Cutocala fraxini* captured in the Regent's Park on the 12th September; and a singular variety of *Chærocampa Elpenor* from Ipswich, having the central portion of each fore-wing completely hyaline.

Mr. Janson (for the Rev. A. Matthews) exhibited two recently detected species of British *Coleoptera*, viz., *Throscus carinifrons* (see Ent. Mo. Mag., viii, p. 135), and *Cryphalus piceæ*.

Mr. McLachlan exhibited *Bittacus apterus*, recently described and figured in this Magazine.

Mr. H. Vaughan exhibited the dark form of *Triphæna orbona* captured at Forres by Mr. Norman, and described as *T. Curtisi* by Newman. Mr. W. A. Lewis pointed out the synonymy of this form, it having been confounded with *T. consequa* and *T. subsequa* by Curtis and Stephens respectively. Mr. Vaughan also exhibited a nearly black variety of *Arge Galathea* captured by Mr. Farn.

Mr. Müller exhibited the impregnated and unimpregnated eggs of *Libellula flaveola* referred to in the November number of this Magazine; also a gigantic oak-gall, from N. America, given to him by Mr. Riley.

Professor Westwood exhibited numerous specimens of an ant not hitherto recorded as British, the true *Formica herculeana* of Linné. These had been found in the proventriculus of an example of the great black woodpecker, *Picus martius*, said to have been shot in Wytham Wood near Oxford. From the fresh state of both bird and ants, and from the fact that these latter had not passed into the gizzard, he was inclined to fully believe the statement of the British origin of the bird, especially as this had been sold at a price indicating that the vendor, a labouring man, had no knowledge of its value. Mr. Jenner Weir, and other Members, utterly disbelieved the supposed British origin of the woodpecker in question. Prof. Westwood also exhibited two male examples of *Papilio Crino* from Ceylon, one of which presented a character in the hairy clothing of some of the veins, which, though usual in many species, was not considered an attribute of this.

Mr. F. Smith exhibited a *Noctua*, apparently of the genus *Aplecta*, captured by Mr. Gwyn Jeffreys on the Atlantic, 220 miles from Nova Scotia, and on the outward voyage. (Since identified with *Aplecta occulta*.)

Baron Chaudoir communicated notes on *Eurygnathus parallelus*, combating Mr. Wollaston's recently expressed opinion that it was only a form of *E. Latreillei*.

Mr. Briggs read a paper "On the forms of *Zygæna trifolii*, with some remarks on the question of specific differences as opposed to local or phytophagic variation in that genus."

DESCRIPTION OF A BRITISH SPECIES OF *SCOPARIA* NEW TO SCIENCE.

BY F. BUCHANAN WHITE, M.D.

SCOPARIA SCOTICA, n. sp.

Alis anticis pallide cinereis, sub-triquetris, apicibus sub-acutis, marginibus apicalibus obliquis; strigis obscurioribus, primis interne, secundis externe, albido-marginatis; strigis primis sub-rectis, secundis angulatis et denticulatis; stigmatibus obscurioribus, orbiculari et claviformi strigam primam attingentibus, reniformi literam X simulante, fusco vel luteo-fusco repleto; marginibus apicalibus leviter punctatis; ciliis albidis lineâ cinereâ dissectis. Alis posterioribus exalbidis, sub-hyalinis, ad limbum sub-fuscis; ciliis ut in alis anterioribus.

Exp. alar. maris, 10'''—11'''.

Habitat: Perthshire.

Closely allied to *Scoparia cembræ*, from which it differs in the front wings being less oblong and more triangular and dilated before the hind margin, as well as by the breadth across the hind margin being greater in proportion to the length of the wing.

The apex is more acute than in that species, and the hind margin is oblique. The colour of the front wings is grey, not brownish, and the lines and stigmata are more distinctly marked than is usually the case in *S. cembræ*. The lines are slender and blackish, margined, the first towards the base, the second towards the hind margin, with whitish. The open orbicular, and the dash-like claviform stigmata, are attached to the first line, and the reniform stigma is X-shaped, and filled in with fuscous or yellowish-fuscous. The second line is finely serrated and bi-arcuate, the first arch close to the costa, and about one-fifth the size of the second arch, which occupies the rest of the line. The apical area is rather paler than the rest of the wings, and the hind margin has a series of grey spots. The cilia are whitish, intersected by a grey line parallel to the hind margin. The hind-wings are silky-white, clouded with pale grey along the hind margin; the cilia as in the front wing.

I have seen several specimens, taken in the vicinity of Perth by Messrs. T. Marshall and W. Herd.

Dr. Knaggs, to whom I submitted a specimen, kindly informs me that, in his opinion, this *Scoparia* is "certainly new."

Perth: December, 1871.

NOTES ON THE EARLIER STAGES OF SOME SPECIES OF *LITHOSIIDÆ*.

BY W. BUCKLER AND THE REV. J. HELLINS, M.A.

By the help of several friends, we are again enabled to put forth a few words under this heading; being indebted to Mr. F. Merrifield

for the information which led to the capture of *Setina irrorella*; to Mr. Barrett for eggs of *Lithosia muscerda*; to Mr. Birks for eggs of *Nudaria senex*; to Dr. White for larvæ of *Nudaria mundana*; and to Mr. Harwood for larvæ of *Lithosia mesomella* and *Lithosia complana*.

NUDARIA SENEX. Eggs received on July 18th, 1870; larvæ hatched on 21st; fed on decayed sallow and bramble leaves, on the young growth of *Hypnum sericeum* and *Weissia cirrata*, and on *Lichen caninus*; hibernated; moulted for last time early in May, 1871; full-fed about beginning of June; the moth out June 23rd. Mr. Birks describes the locality in which the moths were captured by him, as a swamp very rich in plants; and he found them either hovering over tufts of low herbage and coarse grass, or resting on the blades and stems of the grass or reeds; he could see no lichens except on the trunks of the trees growing there, and he never noticed the moths haunting these, as we might suppose they sometimes would, if they deposited their eggs on them; possibly the food may be some lichen growing under the herbage on the damp ground. The female, while laying her eggs, mixes with them fluff from a tuft at her tail, which she detaches by means of her two hinder feet; and the way in which the fine plumes from this tuft adhere to the eggs makes it rather hard to describe them.

The larvæ, when hatched, were placed in a flower pot with growing moss and lichen, and straightway hid themselves, and nothing more was seen of them till the solitary survivor of the whole brood was detected feeding early in May; probably the rest were destroyed, while yet tender, by the small slugs and snails that infest lichens, and cannot be got rid of except by picking the latter to pieces; small centipedes also hide themselves away craftily, and no doubt do mischief.

The egg is small, globular in shape, but so soft that the outline is not at all regular, the shell shining, covered with faint irregular reticulations, yellowish in colour. The young larva is pale grey, with central olive stripe down the back, and with five or six long pale grey hairs from each tubercle. Just before the last moult, the whole larva has a waxen, dull, smoky appearance; the tubercles raised, and studded with tufts formed of short, smoky hairs, mixed with a few feathered plumes. When full-grown, the length is three-eighths of an inch, the figure very stout in proportion; the tufts so dense that the skin cannot be well seen, except when the larva curls itself up, and then it is seen at the segmental divisions—waxen-looking, and of a deep reddish-grey colour; the head shining black, the anterior legs glossy, tipped with black, the ventral legs translucent, in colour pale grey; the tuft-bearing

tubercles are six in number on each segment; the tufts on the second segment are composed of single dark brown hairs, but the other tufts are much denser, and formed of two sorts of hairs, the more numerous being pale brown stiff hairs, with sharp black points, and being sparsely barbed or feathered, the others, fewer in number, are taller, with black stems, and densely feathered all round with soft pale brown plumage.

The cocoon was of an oval form, about four lines in length, formed of close spun silk, and attached to the cover of the box in which the larva was confined; the hairs of the coat were all woven in, giving the cocoon a brown colour, and rough texture. The pupa skin, examined after the exit of the moth, was about one quarter of an inch in length, highly polished, of a rich deep brown colour, the segmental divisions showing as pale reddish rings.

NUDARIA MUNDANA. The full-grown larva received on 31st May, 1869, having been captured feeding on lichens on an old stone wall.

Its length three-eighths of an inch, its figure rather stout in proportion, uniform in bulk throughout; the legs all well developed; six raised tubercles on each segment bearing long straggling fine hairs; the ground colour of the back bright sulphur-yellow; the dorsal stripe dark greyish-brown; a blackish dorsal spot on the eighth segment; the sub-dorsal line blackish-brown, the whole body below this, including the legs, of a semi-translucent pale greyish-brown, all the tubercles and hairs rather dark greyish-brown, the head dark brown.

SETINA IRRORELLA. On July 30th, 1865, some eggs were received from Dr. Knaggs, and noted as globular, pearly in texture, clear purplish-brown in colour; the larvæ hatched August 13th, but no note of them was taken, and they must soon have perished from want of proper food and treatment. However, there is no doubt that in their habitat they must hybernate when small, and feed up in early summer.

On May 24th, 1867, after considerable search, a number were found, then approaching full growth, on the Sussex coast. The food is a blackish-brown lichen, growing on stones above high water mark, and in some cases mixed with a yellow lichen, a fact of much interest when the colouring of the larva is considered. The larva seems fond of sunshine, moving about in it slowly over the stones; when about to moult, it protects itself by spinning overhead a number of silken threads, under cover of which it remains until the moult is completed.

The moths were bred early in July.

When the larva is full-grown, its length is about six-eighths of an inch, the figure proportionate, moderately stout, tapering a little from

the fourth segment to the head, and again at the thirteenth; six raised tubercles on each segment studded with longish hairs: the ground colour blackish-brown above, and dark reddish-grey, or purplish-grey, on the sides; belly and legs reddish; the dorsal stripe takes the form of a series of deep, brilliant yellow, acorn-shaped marks, the acorns pointing backwards, and so placed that the segmental folds mark the separation between the cup and the fruit; the paler and duller yellow sub-dorsal line much interrupted; the spiracular stripe of bright yellow also much interrupted; the raised tubercles blackish; the hairs blackish-brown; the ground on the back, and the lower part of the sides, minutely freckled with yellow; the inconspicuous spiracles dirty-white, ringed with black.

The short, stoutish pupa, placed in a cocoon of thin webby silk, spun amongst the stones and *débris*.

LITHOSIA MESOMELLA. It was recorded at p. 111 of E. M. M., vol. v, that this species had been reared to about half-growth, and its appearance at that stage described: we can now speak of the full-grown larva.

On May 5th and 25th, 1871, specimens were received, which had been found on the trunks of oak trees, feeding on a pale lichen growing intermixed with moss, but not sufficiently developed in its growth to enable us to make sure of its name. These larvæ soon spun up, and the moths, extremely fine examples, were bred on June 9th and 18th.

The full-grown larva is nearly an inch long, figure moderately stout, and tapering only at the head and second, and at the thirteenth segment; on each segment behind the second are eight raised tubercles densely tufted: the colour of the body is deep velvety, slaty-blackish; the head shining black; a deep velvety, black patch on the second segment; the anterior legs shining black, the ventral legs pellucid, pale greyish, tipped with black; the second segment bears only simple black hairs, and similar hairs are found along the sides of the other segments just above the legs; but the tufts on their upper parts are composed of black hairs so densely feathered, that they catch the light, and receive quite a greyish effect from their peculiar softness, and almost entirely hide the skin beneath. In this peculiar featheriness of the larval clothing, this species comes so close to *Calligenia miniata*, that it might well stand in the same genus with it; and it seems no improvement on the arrangement of Doubleday's List, in which they do actually stand close together, though in different genera, to separate them, as Staudinger has done, by the insertion of *irrorella*, and others, between them.

The pale brown stout pupa is enclosed in a comparatively large cocoon, formed of semi-transparent, thin, greyish silk web, spun in any convenient hollow under the moss or lichen.

LITHOSIA MUSCERDA. Eggs received July 30th, 1870; larvæ hatched August 3rd; received the same treatment and food as that given above for *N. senex*; hybernated small, when about one-fifth of an inch long; three were seen alive and feeding in February, 1871; moulted at the end of March; two were then accidentally lost; the survivor moulted for the last time on May 6th; full-fed about the end of that month; spun a cocoon, but had not strength to become a pupa. Probably the right food is some sort of lichen growing on the willow bushes in the soaking wet parts of the fens, where the moth occurs: Mr. Barrett finds that it affects these bushes far more than any other kind of growth in the fens, and he observes that it is on the wing from early dusk till darkness sets in, when it disappears until midnight, after which hour it has another short flight; and probably there is a third flight in the morning dusk.

The egg was noted as small and shining. The young larva is of a dirty-whitish colour, with black head, the tubercles furnished with single, stiff, dark hairs. When the larva is about one-fifth of an inch long, the tubercles are shining black, and furnished with tufts of short hairs, the head shining black, the general colour of the body and hairs dull black, dorsal line and segmental folds velvety-black, a pair of dull orange spots on the second segment. This appearance continued up to the last moult; after that had taken place, for an hour or two the colouring was very striking; the head was shining white, and while the tufts on the first segment, and down the centre of the back were darkish brown, all the others were bright, light, reddish-brown; but this gay dress soon sobered down again.

The length of the full-grown larva is about three-quarters of an inch, the figure rather stout, cylindrical, tapering only at the second segment and head, and again at the thirteenth; the legs well developed; eight tubercles on each segment raised and tufted, the front dorsal pair being only moderately large, but the hind pair much enlarged, and transversely oval in shape; on segments three and four the front pair are larger than the hinder pair; all these tubercles thickly set with very short hairs. The general colouring is rusty-black; the ground colour of the body being velvety blackish-brown, marbled with reddish-grey, the dorsal stripe and sub-dorsal line deep velvety-black; on each side of the dorsal on the second segment, and again on the front of the

thirteenth, is a squarish, dull, deep, red spot; head shining black; tubercles and hairs all deep brown; each front pair of tubercles set in reddish-grey rings; there is a fine, reddish-grey, interrupted, sub-spiracular line; the belly pinkish-grey, all the legs shining, dark, reddish-grey, tips of prolegs pellucid.

The larva retired into a curled-up bramble leaf, and there formed a thin, webby cocoon of greyish silk, outside which was a finer and thinner web of white silk.

LITHOSIA COMPLANA. The larva of this species has long been known, and descriptions of it have been published by many Entomologists; our object, therefore, in introducing any remarks upon it in this paper, is not so much to describe it over again, as to say something about it with reference to the larva of *molybdeola*.

At page 109 of E. M. M., vol. v, was published an account of two larvæ of *molybdeola* reared from the egg in 1867-68, very careful figures of which were also taken, with the view of using them for comparison when the larva of *complana* could be procured. And in this way we have used them both this last summer, and the summer before, and have noted the following particulars.

In several points there exists between the larvæ of *complana* and *molybdeola* the similarity which is also shown by their imagos: *complana* is rather the larger of the two, but there is in both the same figure, the same arrangement of tubercles, the same sort of hairs in the tufts; in their colouring there is the same ground of dead blackish-grey, the brown tubercles and hairs, the velvety-black dorsal and lateral stripes, and the sub-dorsal row of parti-coloured orange-red and white spots. Now, in the descriptions of *complana*, we find these spots called *oval*; "taches ovales,"* Guenée calls them; "taches arrondies ou un peu ovalaires,"† says Boisduval; and, as far as we can gather from our friends who are accustomed to take the larva of *complana* in this country, they do not know of any other shape for these spots but *oval* or *roundish*; in the two larvæ of *molybdeola* mentioned above, these sub-dorsal spots had no roundness whatever in their shape, but were *narrowish*, *oblong*, *somewhat wedge-shaped* marks. Boisduval, in his account of *complana*, goes on to say, "Elle varie un peu pour la couleur et pour la forme des taches orangées; quelque fois celles-ci sont blanches sur tous leurs bords avec le centre orangé; d'autres fois il n'y a que la partie postérieure de chaque qui soit orangée. Souvent elles sont alongées

* Annales de la Société Entomologique de France. 1861. Premier trimestre.

† "Collection Iconographique et Historique des Chenilles."

ou un peu triangulaires, et semblent presque former, lorsque la chenille est en repos, deux raies non interrompues:" so that we must either give up the shape of these sub-dorsal spots as a point of difference, or else suppose that Boisduval had seen larvæ of *molybdeola* as well as of *complana*. In coming lower down the side, below the black lateral stripe, which comes next to the sub-dorsal spots, we reach another point: and here Boisduval fails us, for he says nothing of the side of *complana*, only that "les stigmates sont peu apparents," and "le dessous du corps est grisâtre," and then he gives the colour of the legs. Guenée is much more precise, "la région laterale est plus pâle" (than the ground colour), "avec des linéaments noirs, marqués, à la place de la stigmatale, de traits fauves, isolés, tres fins;" and other descriptions also speak of a reddish-yellow line running just above the feet. Now, the *description* of *molybdeola* before referred to does not help us much here, for it omits some particulars, the importance of which was not then seen; but the *figures* show most distinctly that, while in *complana* the spiracular region is occupied by *one broader* rust-coloured line, in *molybdeola* there is first a *fine line of pale grey*, then a line of the ground colour, and then a *narrower* line of the rust colour; and, unless the inspection of a larger number of larvæ of *molybdeola* can prove that this arrangement of lines is not permanent, we have in it a good distinctive character; and perhaps any one, who could place the living larvæ of both species side by side for comparison, would, on a careful examination, find others equally good.

9th December, 1871.

DESCRIPTION OF A NEW AFRICAN BUTTERFLY.

BY THOMAS CHAPMAN.

CRENIS BENGUELÆ, n. sp.

♂. *Upper-side*: both wings pinkish-lavender. Fore-wing: apex black, narrowing down the hind margin, and continued slightly up the nervules; a row of five marginal black spots near the apex, and a larger black spot near the anal angle. Hind-wing: outer margin edged with black; a marginal band of oval black spots, and more inwardly a row of five black dots; fringes white.

Under-side: fore-wing: base orange, rest light bluish-green; central portion blotched with purple and black, outer margins edged with black; a marginal row of eight black spots, with an inner row of three, near the costa. Hind-wing: light blue-green, outer margin edged with

black; following the curve of this margin in order towards the base, an interrupted black line, a narrow band of orange, a line of seven black spots, a second band of orange, a band of eight irregular black dashes, a third band of orange, three black dashes, base orange.

Expanse, $2\frac{6}{10}$ inches.

Habitat: South West Africa.

Glasgow: November 18th, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 11).

BY H. W. BATES, F.L.S.

Genus ADRIMUS (Dej. Cat.), *nov. gen.*

*Corpus oblongum, vix convexum; minus robustum. Caput ob-
ovatum, oculis magnis, modice prominulis, collo gradatim angustato. Antennæ dimidium corporis vix superantes, ab articulo quarto dense
pubescentes. Mentum medio simpliciter dentatum. Palpi graciles, arti-
culis duobus terminalibus æquales, ultimo cylindrico-truncato. Thorax
elytris angustior, postice recte truncatus, ad basin utrinque late foveatus,
fovearum fundis striolâ impressis. Elytra apice sinuata, fortiter striata,
iridescentia, interstitio 3^{io} unipunctato; striolâ scutellari nullâ. Meta-
sternum quam latitudo anterior vix longius, postice modice angustatum;
epimera brevissima, lata, postice recte truncata. Mesosternum intra
coxas concavum, canaliculatum. Pedes graciles, setulis rigidis instructi;
tibiarum anticarum apices haud dilatatæ. Maris tarsorum anticorum
articuli tres basales paullo dilatati, haud obliqui, angulis fortiter rotun-
datis, plantis biseriatim squamosis.*

This is another genus allied to *Loxandrus*, *Metoncidus* and *Stolonis*. In form, some of them, having a narrow sub-cordate thorax, resemble *Anchomeni*; but others, with the thorax not narrowed behind, are exceedingly like the smaller *Loxandri*. The dilatation of the ♂ fore tarsi resembles that of the *Anchomeni*, the first joint being elongate-triangular and the second and third ovate, not *transverse cordate* as in the *Feroniæ*; the fourth is small and triangular. A very good generic distinction is presented by the metasternal epimera, which are very short and broad, with straight hind margins, quite unlike the same organs in the *Loxandri*, which are as long as broad, with regularly rounded hind margins, similar in fact to the epimera of *Pæcilus*. This character is the only one which distinguishes the females of *Adrimus* from those of *Loxandrus*.

ADRIMUS MICRODERUS, n. sp.

Gracilis, niger, nitidus, iridescens, capite lævi; thorace capite paulo

latiori, sub-cordato, angulis anticis fortiter deflexis, collo adhærentibus, lateribus antice fortiter rotundatis, postice longe (haud sinuatim) angustato, angulis posticis rectis, basi grosse parce punctato, foveâ utrinque latâ impresso; elytris fortiter striatis, striarum fundis eleganter punctulatis, interstitiis (ac præcipue lateralibus) convexis; corpore subtus sericeo-nitente; palpis coxisque rufo-piceis. Long. 4 lin. ♂.

Ega; under decaying logs in moist places.

ADRIMUS RUFANGULUS, n. sp.

Elongato-ovatus, piceo-niger, sericeo-nitidus, iridescens, antennis basi, palpis pedibusque (tibiis postice fuscis exceptis) rufo-testaceis; thorace latiori, transverso, antice paulo rotundato, postice haud angustato, basi grosse parce punctato, foveis latis, ad fundum oblique sulculatis, marginibus posticis rufo-testaceis; elytris haud profunde punctulato-striatis; abdomine piceo. Long. $4\frac{1}{4}$ lin. ♀.

Ega.

ADRIMUS VIRIDESCENS.

Loxandrus id. Bates; *ante*, p. 132.

On re-examining the whole of my *Loxandri*, I find that this species has the peculiar transverse-linear form of the metasternal epimera characteristic of *Adrimus*; and, on looking more carefully at the ♂ fore tarsi, I observe that they are not oblique. The species is therefore an *Adrimus*. It is distinguished from *A. rufangulus* (which it resembles in the rufous margins of the thorax) by its smaller size (3— $3\frac{1}{4}$ lin.), and by its thorax being distinctly but slightly narrowed behind and much less punctured at the base.

A common insect in the Amazons region.

ADRIMUS GEMINATUS, n. sp.

A. viridescenti simillimus; differt tantum elytrorum interstitiis 4^{to} et 6^{to} latis, planis, striisque 2^{nda}—3^{ia} et 4^{ta}—5^{ta} (præcipue postice) approximatis, 4^{ta} et 5^{ta} ante apicem interruptis. Long. $3\frac{1}{4}$ lin. ♀.

The resemblance between the single specimen of this insect and the preceding species (of which I have half-a-dozen examples) is perfect in every respect except the disposition of the elytral striæ; so that I am in doubt whether it is not an aberration, although no parallel case is known to me among the *Carabidæ*. In all the *Adrimi* the striæ are at equal intervals and deeply impressed, except the middle striæ on the disc, which are a little fainter.

Ega.

ADRIUM CREPERUS, n. sp.

A. viridescenti quoque proxime affinis; differt tantum colore minus piceo, magis æneo, elytrorum suturâ marginibusque vix rufescentibus, thorace postice vix angustato, versus angulos posticos haud explanato, angustissime pallido marginato.

Long. $3\frac{1}{4}$ lin. ♂.

Pará.

Genus DIPLOHARPUS.

Chaudoir, Bull. Moscou, 1852, ii, p. 394.

A remarkable genus of *Anchomeninæ*, peculiar to Tropical America, and distinguished by the long narrow mandibles and other parts of the mouth,—the long exserted maxillæ projecting even beyond the mandibles. The pubescence of the antennæ commences at the third or even the second joint, but it is not dense on these joints, and it is doubtful if the fine pubescence proper can be said to commence before the 4th.

DIPLOHARPUS EBENINUS, n. sp.

D. lævissimo (Chaud.) proxime affinis, at minor, gracilior, elytrorum striâ 2^{nda} profundius impressâ; nigerrimus, elytris leviter iridescentibus, oris partibus, antennis, trochanteribus, tibiis intus tarsisque rufo-testaceis: capite thoraceque ut in *D. lævissimo* impunctatis; elytris convexis, postice gradatim dilatatis, prope apicem abrupte angustatis, suprâ lævissimis, striis duabus punctatis prope suturam distinctis, ad basin oblitteratis, prima solum apicem attingenti; femoribus extus piceis: abdomine rufescenti.

Long. $4\frac{1}{4}$ lin. Lat. elytr. $1\frac{3}{4}$ lin. ♂.

The dimensions given by Baron Chaudoir for his South Brazilian species, *D. lævissimus*, are, "Long. 5 lin., lat. elytr. 2 lin.," which agree with my specimen. *D. ebeninus* is smaller and more slender; the ♂ differing from ♂ *lævissimus* in the elytra being narrower at the base and dilated towards the apex.

Pebas, Upper Amazons.

DIPLOHARPUS RUBRIPES, n. sp.

D. lævissimo similis, at multo minor, nec non gracilior, elytris ovato-cordatis, baseos medio paulo emarginato, humeris distinctioribus; niger, nitidus, oris partibus, antennis, pedibusque rufis; abdomine elytrorumque margine deflexo piceo-rufis; corpore suprâ lævissimo, elytris striis duabus punctatis, suturali solum distinctâ, impressis.

Long. $3\frac{1}{2}$ lin. Lat. elytr. $1\frac{1}{2}$ lin. ♂.

Ega.

DIPLOHARPUS STRIOLATUS, n. sp.

Minor, niger, politus, oris partibus, antennis, pedibusque rufis, abdo-

mine apice rufescenti; thorace transverso, antice multo minus quam in precedentibus rotundato, posticeque minus angustato, angulis omnibus magis prominulis; elytris striâ suturali solùm haud punctatâ impressis, ad apicem striâ brevi acute impressâ, ab suturâ oblique ductâ:—antennis brevibus; palpis apice angustatis.

Long. $2\frac{1}{2}$ lin. Lat. elytr. $1\frac{1}{8}$ lin. ♂ ♀.

Distinguished not only by its smaller size and transverse quadrate thorax, but by the very distinct and sharply scored short stria at the apex of the elytra, separated from the strongly marked sub-marginal stria by a narrow ridge. All the preceding species have an irregular impression in the same position; but the impression becomes a very definite stria or sulcus in the present one.

Ega.

DIPLOHARPUS SEXSTRIATUS, n. sp.

Minimus, piceo-niger, politus, oris partibus, antennis, pedibusque clarè fulvo-testaceis; thorace magno, lato, lateribus late rotundatis, postice paulo angustato, angulis posticis obtusis, haud prominulis; elytris utrinque prope suturam striis latis tribus punctatis distincte impressis, nec basin nec apicem attingentibus, exterioribus valde abbreviatis, ad apicem haud striolatis, striâ sub-marginali flexuosâ; antennis brevibus, articulis apicem versus crassis; palpis apice acuminatis.

Long. $1\frac{1}{2}$ lin. ♀.

In the gradually pointed palpi and sub-moniliform antennæ this species seems to connect the genus *Diploharpus* with *Trechicus*.

Ega.

Kentish Town: December, 1871.

Note on Cryptophagus grandis.—Having been enabled, through the courtesy of Messrs. E. W. Janson and G. R. Crotch, to examine the insects (taken by the former gentleman in the north of London) in their collections representing this species, and upon which it was introduced as British, I can come to no other conclusion than that these specimens are merely pallid individuals of *C. populi*, and that *C. grandis*, Ktz., must be expunged from our lists. Dr. Sharp, who has subsequently examined Mr Crotch's exponents, is also of my opinion. Moreover, from the description (and especially the avoidance in it of any mention of *populi*, which is not included in the *Insect. Deutschl.*, and to which only this insect could apparently be likened with reason), I think it very probable that Kraatz's *grandis* is itself only pale *populi*, Payk.—E. C. RYE, 10, Lower Park Fields, Putney, S.W., December, 1871.

Note on Cryptophagus Waterhousei, Rye.—I feel, reluctantly, obliged to withdraw this insect as a good species, as I have come to the conclusion, in spite of several minor discrepancies, that it is a monstrosity of *C. acutangulus*, Gyll. Thomson's record of supposed *acutangulus*, with a similar equilateral thoracic

development, did not shake (on the contrary, rather strengthened) my belief in as a species; but I have recently seen a British specimen belonging to Dr. Sharp one side of the thorax of which is that of normal *acutimargulus*, and the other more than intermediate between that species and *Waterhousei*. Abandoned as a species I presume the British origin of the individual will not again be questioned.—ID.

Note on the habits of Dorcatoma bovista, Ent. H.—In September last, my friend Mr. Linton and I found the larvæ of this species in small dry specimens of *Bovista plumbea* and other small fungi, on a sandy flat near Barmouth.

In less than a week, several perfect specimens of the *Dorcatoma* made their appearance; others have since continued to do so very sparingly, and, as the fungi still contain larvæ, other specimens may come out next spring. Sometimes the larva eats its way out of the fungus, and at once changes into the pupa state, from which it becomes the perfect insect in about ten days; but usually it forms a cocoon of spores, changing to the pupa state inside the fungus, out of which the perfect insect eats its way.

We found the *Bovista* in all stages of growth, from the size of a pea to the old dry specimens in which were the larvæ; but there were no traces of larvæ in any of the fresh fungi, although it seems most probable that eggs had been laid and hatched in some of them; probably the larvæ were too small to be easily discovered.

I was directed to the place where we found the fungi by Mr. J. Kidson Taylor, whose original capture of the *Dorcatoma* at Barmouth has been recorded in this Magazine. The species appears to be very local, as fungi picked up in other places in the neighbourhood contained no trace of the insect.—J. SIDEBOTHAM, 19, George Street, Manchester, 11th November, 1871.

Note on Nemosoma elongata.—Having, some years ago, met with a few dead examples of this species in an old rail near Beeston, Notts., I determined, as I was staying for a few days in the same neighbourhood during this week, to find the insect in a living state, if possible. An examination of a few elm rails in the meadows near the Trent soon produced a few specimens, along with their constant companion, *Hylesinus vittatus*.

On naming the matter to my friend Mr. E. J. Lowe of Highfields, I asking him where it was probable I should meet with more elm rails, he suggested that I should examine the wood yard behind his garden. We accordingly did so, and I soon found a considerable number of specimens, leaving many logs and rails untouched.—ID.

On Pezomachus trux, Först., and P. fasciatus, Fab., ♂.—At p. 162 of this vol., I stated that the male insects sent by Mr. Fletcher were *Hemiteles tenuicornis*, Gr., according to Mr. Desvignes. Three specimens named by Mr. Desvignes have always stood unquestioned in my collection under that name; and they are certainly identical with Mr. Fletcher's specimens. But examination of them by the descriptions of Gravenhorst and Taschenberg, shews that they cannot be *H. tenuicornis*; of which the ♂ ♀ are both known, winged, and with the metathorax areolated. I regret to have been led into error by accepting this name without examination. The result of a careful search into the nomenclature of these insects may be thus briefly expressed:—*Pezomachus trux*, Först, ♀, = *hortensis*, Gr.,

var. 5, ♀, = *Hemiteles palpator*, Gr., ♂, and var. 4, ♂ (excll. ♀ and other varr.), = *H. palpator*, Tasch., ♂. The ♂ of another species is now known to me, through the kindness of Mr. F. Smith, who has lent me a number of *Pezomachi*. The ♂ in question is the one referred to in Tr. Ent. Soc., ser. 2, 1859, vol. v, p. 209; and was reared with *Pezomachus fasciatus*, F., from the eggs of *Agelena brunnea*. The synonymy in this case is as follows: *Pezomachus fasciatus*, Fab., Gr., ♀, = *Hemiteles luteiventris*, Gr., ♂, = *Hemimachus fasciatus*, Ratz., ♂ ♀. Both species belong to *Hemimachus*, Ratz., a genus to be retained at present as convenient; and their respective names, without an *alias*, should, I presume, be *Hemimachus trux*, Först., and *Hemimachus fasciatus*, Fab. The trivial names *hortensis*, Gr., and *palpator*, Gr., have the priority indeed, but must be thrown aside as including a jumble of species.—T. A. MARSHALL, St. Albans, December 15th, 1871.

On dipterous pupæ found in gall-like nidi on the fronds of Athyrium filix-femina.—Among many other novel and welcome contributions from across the border, I am indebted for the subject of the following note to the kindness of that indefatigable naturalist, Mr. George Norman.

In the middle of July last, this gentleman transmitted to me a series of very curious foliaceous green balls, ranging from the size of a hazel-nut up to that of a walnut, each one consisting of a crumpled up and distorted frond of *Athyrium filix-femina*. A memorandum accompanied the specimens, stating that they had been found at "Relugas, Morayshire."

My first involuntary impression, for which I feel sure Mr. Norman will readily grant me absolution, was, that my well-known penchant for the study of such objects had led to the perpetration of a mild joke, as the balls looked as if they had been rolled up by human hands.

But closer examination very soon convinced me that my esteemed correspondent had again been one of those lucky observers, of whom we read:

"Nature showing whom she will
Where her inner secrets lurk."

On unrolling one of the balls, I found that the main rib of the frond had been contracted in such a manner as to act like a rough sort of spring, of the more or less spiral contortions of which the ball was made up. The loose centre of the ball consisted of the crumpled up anterior part of the frond, in a semi-decayed, and brown, moist condition. Within this central nidus, a larva seems to have lived; and, as evinced by the peculiar state of the surroundings, seems to have partaken of the sap of the plant for sustenance, after the manner of the *Cecidomyidæ*, *Trypetidæ*, and other *Diptera*. But this larva I do not know; on the other hand, an examination of several specimens of this leafy nidus has produced four dipterous pupæ, one from each nidus; and, although I carefully searched all the specimens, no trace of any other insect, dead or alive, turned up. The following is a description of one of these objects:

Dipterous Puparium: Coarctate, rigid, coriaceous, shining chestnut-brown, extremities darker, elliptic, elongated, tapering to both extremities, but less so to one than to the other; upper-side slightly arched, under-side somewhat flattened; stouter extremity viewed from above distinctly produced into a narrower, short, truncated, and somewhat flattened cone; the two extreme distant points of the cone drawn out into an extremely short truncate joint; thinner

extremity viewed from beneath, rounded off into a crown of short protuberances, of which two thick and short ones are close together and centrally situated, while each side is flanked by two delicate distant teeth; viewed from above, the thinner extremity shows only the two central protuberances plainly. Segments of the puparium, and a row of lateral stigmata on each side, visible to the naked eye.

Length, $5\frac{1}{2}$ millimètres.

Greatest width, 2 millimètres.

By this description it will be seen, that these puparia belong to one of the *Muscidæ*; but I think it hardly safe to speculate as to their nearer relationship. I have placed the four healthy specimens in my possession under different "régimes;" but, as the wintering of such pupæ is a ticklish matter, I think it advisable to publish this note now; then, happen what may, the next observer who comes across their home, "that wee bit heap o' leaves," will know it; and will perhaps complete Mr. Norman's interesting discovery, by rearing the fly.—ALBERT MÜLLER, South Norwood, S.E., November 11th, 1871.

Occurrence near Derby of a Noctua new to Britain: Agrotis helvetina, Bdv.—On the 16th of November last, I received from Mr. George W. Taylor, of Derby, a strange looking *Noctua*, quite unlike any recorded British species. Mr Taylor informed me that in July, 1870, he had captured this specimen (a ♀) as it was flying along a hedge, and that about the same time his cousin had secured two more examples of the unknown. He had since vainly endeavoured to get the insect named; and at last, in despair, I suppose, forwarded it to me. Unfortunately, the only specimen of *helvetina* to which I had access for purposes of comparison was a male, and this differed from Mr. Taylor's insect both in the fore-wings and length of the antennæ; so that after taking a description of it I at once returned it, with a request that a male might be forwarded, in the event of either of his cousin's captures proving to be of that sex. One of these, a male, was most obligingly sent to me, and settled the question by showing that his antennæ were not too long, and that the apices of his fore-wings were of the requisite acuteness—in short, left no doubt whatever in my mind as to the proper place of the species in nature.

Agrotis helvetina is quite an inch and three quarters in expanse. The fore-wing is of a unicolorous reddish-ochreous drab, approaching pale dull fawn colour, with a peculiar silky or satiny texture and lustre, which at once arrests the attention, particularly by gas light; the reniform stigma is faintly indicated and tinted, at the side towards the apical margin, with leaden colour; and except that, when examined at certain angles, the elbowed line is faintly discernible, there are no other markings. The hind-wings are silky fuscous-whitish, with a barely discernible lunule. The cilia of all the wings ochreous-drab. Antennæ long and setaceous. Thorax and abdomen of the same colour as the fore-wings, the anal segments being slightly more ochreous.

Under-surface of fore-wings fuscous, tinged with fawn colour, and shining, more fawn coloured along the costa; beyond the middle are three faint costal marks, and another near the apex; the wings are margined with darker fuscous, and the cilia are paler. Hind-wings shining whitish-fuscous, fawn coloured towards the costa, with a dusky lunule faintly marked; at a little distance from, and parallel with, the hind-margin is a dusky transverse shade. Cilia as in fore-wing.

Legs fawn coloured, under-surface of thorax woolly in appearance, and of a pale ochreous colour. Tongue reddish-brown, split up for half its length into six, in the specimen before me. Eyes dull black.

Female similar, but broader in the fore-wings, which are also more vertical at the apical margin; the antennæ are longer and the tip of the palpi more naked.

The great character of *helvetina* would seem to be the absence of any character; but the peculiar silky lustre is very striking.

Helvetina is a rare species abroad. It has occurred in Germany, France, Switzerland, Piedmont.

The larva is unknown.—H. GUARD KNAGGS, Kentish Town, December 1st, 1871.

Note on Argynnis Niobe and A. Adippe.—I am rather surprised that Mr. Butler should suppose that the capture of *Argynnis Niobe* and *A. Adippe* in *coitû* is a proof of their being varieties of one species. I have seen *Smerinthus populi* and *Sphinx ligustri* in the same situation; and I think no one will deny that these are specifically distinct.

Although I rather doubt the possibility of distinguishing *Niobe* and *Adippe* on the wing, yet if they do chase each other it proves nothing. Every collector must have frequently seen males of *Gonepteryx rhamni* chasing females of *Pieris brassicæ*, and males of this species chasing female *rhamni*. I have often seen males of *A. cardamines* chasing specimens of *Pieris napi*.

I believe *Niobe* and *Adippe* are as distinct as any two species of the genus *Argynnis*. Dr. Staudinger, who is certainly rather too much inclined to sink real species to the rank of varieties, gives them as distinct without any mark of doubt in the new edition of his valuable catalogue of European *Lepidoptera*.

The female *Niobe* is very different, both in colour and form, from the same sex of *Adippe*, and closely resembles the female *Aglaia* on the upper surface; the variations of the two species are also very different.—HENRY DOUBLEDAY, Epping, December 13th, 1871.

Description of the larva of Ephyra punctaria.—On the 28th of August last, I received from the Rev. E. N. Bloomfield, of Guestling, near Hastings, a few eggs of this species. They hatched in a few days, and the young larvæ were pale greyish-green, rather broadly transversely barred with brown. At the end of September they were full-fed, and may be described as follows.

Length about an inch, and of moderate thickness in proportion. Head very slightly wider than the second, but not wider than the third, segment (until full-fed it is considerably wider than the second); it is very finely notched on the crown, the cheeks are globular, and the face flat. Body cylindrical and of nearly uniform width throughout, the second segment being the narrowest, and the twelfth slightly the widest.

In my brood were two distinct varieties, the more numerous of which I will describe as Var. 1. Ground colour pinkish-brown; head chocolate-brown, variegated with grey. A narrow, but distinct pale grey line, edged on each side with a smoky-black line of equal width, forms the medio-dorsal line; an exceedingly fine and almost imperceptible waved grey thread forms the sub-dorsal lines; and there is a similar line above the spiracles. On each side, and on each segment, commencing on the spiracular region, is a dark smoky mark, extending obliquely upwards

and uniting at the divisions on the anterior of each segment: each of these smoky marks is edged anteriorly with lemon-yellow. Usual dots minute, black. Ventral surface grey, with pink longitudinal lines. Some specimens have a much yellower appearance than others, with the oblique marks perfectly black, but edged with yellow in the same way.

Var. 2. Ground colour bright emerald-green; the head as in var. 1; a narrow white line, edged with smoke colour on the posterior segments forms the medio-dorsal line; sub-dorsal and spiracular lines scarcely perceptible. The oblique marks are brownish-red, surrounded with yellow, not so large as in var. 1, and, unlike them, do not meet on the dorsal surface; on the anal segment is a chocolate-brown wedge-shaped mark, edged anteriorly with pale yellow. Ventral surface uniformly green, thickly powdered with whitish.

Feeds on oak, and rests in a very peculiar position, the food being grasped by the claspers, and the whole remaining portion of the body turned sideways against the food plant, which gives it a very ludicrous appearance. There are two equally distinct varieties of the pupa; those from the brown variety being grey, and those from the green larvæ, green. The first larva changed to a pupa on October 6th, and a moth appeared November 3rd.—GEO. T. PORRITT, Huddersfield, November 10th, 1871.

Captures of Lepidoptera near Sheerness, during the past season.—Despite the abominable weather which has been the characteristic of the past season, I cannot, on the whole, complain of my success, insects being abundant enough whenever wind and temperature were such as to admit of their stirring abroad. The following are my best captures in this bare, exposed, and woodless locality:—

Hepialus Sylvinus; common, at rest and flying at dusk. *Porthesia chrysorrhæa*; larvæ in immense abundance, defoliating the white-thorn hedges (to which they were by no means confined) for hundreds of yards, and apparently not at all affected by the Spitzbergen-weather of May and June; last year this species occurred in nearly equal abundance, although previous to 1868 it was quite a rarity in this district. *Spilosoma papyratia*; one specimen at rest on a furze-bush. *Amphidasis prodromaria*; a few males at gas-lamps in the spring. *Acidalia trigeminata*; not uncommonly beaten from hedges. *A. rusticata*; a solitary example, at rest on a coal-shed in the outskirts of the town. *A. promutata*; abundant, at rest on the “sea-wall” between Sheerness and Queenborough, and elsewhere. *A. emutaria*; not very rare, flying at dusk in damp places, from June to August; also at rest among herbage by day. *A. emarginata*; common in hedges. *Aspilates citraria*; common, in waste places near the shore. *Macaria notata*; one example, beaten from a thorn-hedge near Queenborough. *Eupithecia subumbrata*; common on flowery banks. *E. fraxinata*; two specimens at rest on an out-house. *E. nanata*; one at rest on a fence, at the end of August; as far as I am aware there is no heather within many miles of this locality. *E. subnotata*; abundant among *Chenopodium*, also at rest on fences, &c. *E. castigata* and *pumilata*; rather sparingly beaten from hedges. *Anticlea rubidata*; one specimen flying at dusk. *Coremia quadrifasciaria*; one, beaten out of thatch. *Camptogramma fluviata*; a ♂ example on a gas-lamp, unfortunately destroyed in the boxing. *Cidaria miata*; not rare at ivy-bloom. *Eubolia cervinata*; swarming among mallows after dark, in

October. *E. bipunctaria*; abundant on the cliffs, although their soil (indeed that of the whole island) is stiff clay, becoming only a little sandy in places. *Bryophila glandifera*; at rest on the dockyard wall, but much less common than in previous years. *Acronycta aceris*; common at rest, principally in the Dockyard. *Leucania straminea*; a wasted (but recognisable) specimen, at rest on a grass stem in a dry place. *Nonagria fulva*; rare, among reeds. *N. typhæ*; pupa very common in stems of *Typha latifolia* growing on the cliffs. *Heliophobus popularis*; not rare, on lighted windows in town. *Mamestra abjecta*; one example, disturbed from among *Atriplex*, near Queenborough (last year I took four or five specimens of this species, by beating thatch). *Mamestra anceps* and *Agrotis rorida*; rather commonly beaten from thatch, along with scores of *Triphaena orbona* and *pronuba*. *Caradrina cubicularis*, and other common *Noctue*. *Noctua Dahlii*; one poor specimen at sugar. *Teniocampa gracilis*; at sallow-bloom, not common. *Orthosia lota*, *O. macilentæ*, *Anchocelis rufo-pistacina*, *lunosa*, *Cerastis vaccinii*, *spadicea*, *Scopelosoma satellitia*, *Xanthia cerago*, *silago*, and *ferruginea*; all more or less plentiful at ivy-bloom, some being very abundant. *Eremobia ochroleuca*; common on flower heads of *Centaurea nigra*; also at sugar. *Hecatera dysodea*; rare, at rest and flying at dusk. *Epunda lutulenta*, one; *Calocampa exoleta*, two; *Xylina rhizolitha*, two; and *X. semibrunnea*, rather freely, at ivy-bloom. *Heliothis armigera*; one example, on ivy-bloom, in October. I may remark that I have met with this species here on two previous occasions; in 1868, one flying along and settling on a fence; and in 1869, I took two, alas! ruined specimens out of a ditch, into which they had fallen while feeding at the flowers of *Aster tripolium*, which grew on the bank in abundance. *Catocala nupta*; common, at sugar and rest. *Hypena rostralis*; in thatch and at ivy-bloom, very common. *Herminia tarsipennalis*; rather common, beaten from hedges, and flying at dusk. *Pyralis glaucinalis*; in great abundance in the thatch of an out-house, a score or more being sometimes dislodged at each blow of the beating-stick. *Aglossa cuprealis*; one specimen at rest. *Cledeobia angustalis*; locally abundant in waste places. *Acentropus niveus*; abundant on an unfinished canal cutting near Sheerness, the brackish water of which is choked with *Potamogeton pectinatus*. *Botys pandalis*, a straggler in the Dockyard. *Spilodes cinctalis*; not uncommon on the cliffs. *Homocosoma binævella*, sparingly, and *Myelois cribrum*, rather commonly on thistles. *Crambus cerussellus*; abundant in grassy waste places. *C. falsellus*; very plentiful in the thatch of some out-houses near Minster. *C. selasellus*; a few on lighted windows in the town. *Agdistes Bennettii*; rather sparingly among *Statice limonium*.

Of *Clisiocampa castrensis*—usually abundant enough in the larva state on the sea-wall near Queenborough—I was able to find only a very few starved and stunted larvæ, with which I could do nothing at all. Its scarcity during the past season I am inclined to attribute to the cold north-east winds which prevailed during May and June, which, however, seemed not to affect in the least its despised and destructive congener, *neustria*.—JAMES J. WALKER, 7, West Street, Blue Town, Sheerness, November 14th, 1871.

Notes on an entomological visit to Braemar.—From about the 29th of July, I was for some weeks at Braemar, enjoying the hospitality of my kind friend Dr. Buchanan White, whose most agreeable company, with the charm of a new and excellent hunting ground, caused the time to pass very happily. Considering this

miserable summer, I was fairly fortunate in weather on the whole, but the time of year was much against good results, and something like a month to six weeks earlier would have proved far better; yet, with some allowance for these drawbacks, I was very contented with my spoils, of which I proceed to give a general digest.

The *Coleoptera* were all but over, and my few captures were better in quality than quantity, comprising one *Amara Quenseli*, with a few specimens of *Agabus Solieri* and *arcticus*.

Two or three *Cychrus rostratus* turned up, and *Otiorhynchus monticola* was plentiful under stones both in the valleys and on the mountain tops. A solitary *Cicindela campestris* glanced brightly in the sun, the last of a numerous company; and, on some *Potamogeton* in the peat pools, occurred a *Donacia* but sparsely. Far up one of the numerous glens which abound in that district, lay the mouldering remnants of a red-deer monarch of the wild, who, with a royal generosity, had devoted his earthly remains to the furtherance of science, and "rich and rare" were the Coleopterous results to the learned doctors who investigated the said relics, and even I came in for a heavy bag, the bulk of which consisted of several species of *Catops*, and here and there a *Sphærites glabratus* or *Corynetes violaceus*.

Pissodes pini occurred now and then on some new fir wood paling, and I got one example of *P. notatus*.

In *Lepidoptera*, which order I especially pursued, I was tolerably successful. *E. ethiops* (*Blandina*) occurred plentifully, but was very local, it was most abundant in Glen Lim; *C. Typhon*, var. *Laidion* and *C. Pamphilus*, accompanied it, and frequented other spots as well, the latter being very bright and large. *L. Icarus* was on the whole the commonest butterfly, flitting everywhere. I obtained some fine and very dark ♀ *A. Aylia*, but all the males that I saw were of the usual colour. Several of the "profanum vulgus" of *Rhopalocera* were conspicuous by their total absence or rarity, the altitude of Braemar being apparently beyond their range. I did not come across any of the *Sphinges*, but certain of the *Bombyces* were taken, among them a large young brood of the larva of *S. pavonia* feeding on heather. I beat one larva of *N. dictæoides* with several of *L. camelina* off birch. On some of the trees of *Populus tremula*, which grow by the bridge over the Linn of Quioch, were found, spun between the leaves, the larvæ of *C. or.*

Amongst the *Noctuæ*, I may, *en passant*, observe that I found one cocoon of *A. myricæ* on a rock, which, however, had the slight disadvantage of being empty. *H. monoglyphæ* (*polyodon*) came to sugar not rarely, and was much lighter than I should have expected, the dark aberration *infuscata* being unnoticed. On the ragwort bloom I secured some very fine *C. graminis*, larger and darker and brighter than any I had elsewhere taken. The puzzling *M. furva* appeared at sugar. Of *A. strigula* (*porphyrea*) I netted a wonderfully minute specimen. The extraordinary swarms of *N. bija* were noticeable; it, with *N. augur*, outdid any other visitors to our saccharine bait in the proportion of fully a thousand to one. *Festiva* and *conflua* ran into each other in various gradations and variety of marking. *O. suspecta*, with *A. tincta*, were perhaps the best of the takes at sugar; which, on the whole, was, from various causes, by no means richly attractive. The lovely genus *Plusia* was represented by one specimen of *chrysis* and several of *interrogationis*; the last we took best by searching the stones in the damp, broken and rough localities they frequent; while at rest on the stones they may be easily enough boxed, at least, if they are

dozing, but in sunshine a mere shadow will send them off into space with their darting flight. I took one larva of *B. parthenias*. *C. elingvaria*, to turn to the *Geometræ*, was not rare, and *H. wavaria* turned up. *F. brunneata* might be met with in the birch woods, but was local, and apparently not very abundant. *L. didymata* was a perfect pest, and, by wickedly assuming dubious shades of colour, led me some wild goose chases, for which I can hardly say I blessed it; *casiata* was almost equally abundant, though less ubiquitous: both *olivata* and *virilaria* (*pectinitaria*) occurred. *E. sobrinata* swarmed amongst the junipers, whence also the larvæ of *T. juniperata* might be beaten out. *M. bicolorata* (*rubiginata*) was excessively abundant among the alders fringing the banks of the Cluny, and I got some nicely marked specimens, with one of ab. *plumbata*. *C. immanata* presented a wonderful show of varieties, from very dark to almost white; and *populata* was equally common and variable, some of the specimens being almost unicolorous (ab. *musanaria*, F.). After one or two futile searches, we at last lighted on a locality for the beautiful *C. paludata* (*imbutata*), where it was not by any means rare. I met with but few *Pyrallites*, *S. alpinalis* being the best; and among the *Crambites* the only noticeable was *C. margaritellus*, which was abundant in the localities frequented by *Erebica athiops*. From these notes, it will be seen that nothing very wonderful crossed my path; but the captures made at an earlier portion of the summer will render Braemar famous as a northern Paradise for the brethren of the net, when the wonders are disclosed.

In passing the *Hymenoptera*, I would only observe that the colonies of *Formica rufa* possessed the largest cities I have seen in this country, and that if the weary entomologist ventured to rest himself near any wood, he was abruptly and sharply reminded that he was trespassing on the private property of these teeming multitudes; and further, I would recommend any fearless entomologist to try the flavour of fresh formic acid, which he may perhaps like.

I captured some of the *Neuroptera* which came my way, and failed to secure what must, from the place where it occurred, have almost certainly been, *Æschna borealis*. Who ever did net an *Æschna*, save by a "fluke?" Of the *Trichoptera*, for the names of which I am indebted to Mr. McLachlan, I obtained several species, but none of any great rarity.—W. DOUGLAS ROBINSON, Christ Church, Oxford, 19th October, 1871.

Occurrence of an extraordinary variety of Euperia fulvago near London.—I have to record the capture of a striking variety (a male) of the above species at sugar in Highgate Wood, on August 13th, 1870, by Mr. R. G. Burry and myself.

Contrary to the usual rule in such cases, this southern example is much darker than the typical form which occurs in its ordinary and more northern localities. I am informed that the specimen taken by Mr. Stainton at Lewisham, in 1846, approaches it, but is neither so fine, nor so deeply coloured.

The ground colour of the fore-wings is a warm buff, irrorated with minute fuscous atoms. A fuscous "central shade" which runs from the reniform stigma to the inner margin, is separated in the middle, and forms, with the costal spot which joins the reniform stigma, three very distinct, equidistant, fuscous shaded blotches. The orbicular and reniform stigmata are respectively light and dark orange. The hind-wings are whitish, with two rather indistinct fuscous bands towards the hind margin. Thorax and antennæ warm buff, body whitish.

Mr. Stainton's specimen and my own are, I believe, the only recorded south British examples of *E. fulvago*; and their great difference from the ordinary type proves that, at any rate, in this case, the southern form is the darker. It is singular that two only should have been taken in the south, and that both should have occurred near London.

We have sugared in the same locality both this year and last, but have failed to obtain another specimen.

Dr. Knaggs and several other well-known entomologists have seen the specimen, so that there can be no doubt as to the species. I have heard that there was a similar example in the collection of the late Mr. T. H. Allis, of York, now, I suppose, in the Museum of that city. It would be interesting to know, if possible, the locality in which this specimen was taken.—HENRY BARTLETT, 4, Brecknock Street, Camden Town, N.W., November, 1871.

Captures of Lepidoptera at Guestling in 1871.—Although the season has been unfavourable, I have taken several species which may be of sufficient interest to justify a short notice.

June 10th—I bred *Clostera curtula* from a larva taken the previous autumn. 13th—This was a warm evening, and I took at light single specimens of *Eurymene dolobrararia*, *Hypsipetes impluviata*, *Notodonta camolina*, *N. ziczac*, *Neurii saponaria*, and *Hadena pisi*, about half a-dozen *Hadena genista*, together with many other common species. The following evening (14th), I took, also at light, *Notodonta dodonaea*, *Platypteryx falcata*, and *Aplecta tincta*; and found *Acronycta leporina* on some palings. July 5th—*Cryptoblabes bistriga*: of this I took two specimens, both accidentally, when striking at larger insects; 14th—A good number of species came to light, but the only two worth mentioning were *Acronycta ligustri* and *Ephestia clutella*; 17th—Saw the first specimens of *Phycis roborella* and *Rhodophaea consociella*: the former was met with now and then, the latter quite commonly, but mostly worn; they came to light and were also taken by mothing. About this time, I took, by mothing, two specimens of *Melliphora alveariella* (*Achroia grisella*, Stainton's Manual), and on the 31st, *Acronycta auricoma*; I had not seen it here since 1868. August 12th—A favourable evening for light: I took single specimens of *Ennomos erosaria*, *Platypteryx hamula*, and *Hadena suasa*; and on the 14th, I was visited by *Liparis monacha*, *Cerigo Cytherea*, and *Scoparia cembra*; 25th—I met with a single specimen of *Eupithecia expallidata* on a window, at the hall fan-light; and on September 12th, I was very much pleased to see in my garden, *Vanessa c-album*, feeding on the ripe and injured plums.—E. N. BLOOMFIELD, Guestling, November 18th, 1871.

Reviews:

SKANDINAVIENS NEUROPTERA, beskrifne af H. D. J. WALLENGREN. Första Afdelningen. Neuroptera-Planipennia. (In the "Kongl. Svenska Vetenskaps-Akademiens Handlingar," Band. 9, 1871).

It is with great satisfaction that we find ourselves in a position to notice a monographic work upon Swedish *Neuroptera*; a satisfaction intensified by the fact that it is the result of the labours of Pastor Wallengren, who, in the retirement of a Swedish village, devotes himself to the study of Entomology in the spirit of a true Naturalist. This first instalment comprises the *Planipennia*; and naturally

the Swedish fauna assimilates itself in a marked manner to that of the British Islands. Herr Wallengren describes 50 Swedish species, the precise number enumerated in the 'Catalogue of British Neuroptera' by Mr. McLachlan. And the individual specific discrepancies are likely to disappear, when the fauna of both countries shall become better known. Sweden, however, claims a *Myrmeleon*, which we scarcely dare to hope for as a British genus, though the species in question, no doubt the true Linnean *formicarius*, has a wide northern range, even up to 55° in Siberia; the species commonly accepted under this name being decidedly more southern in its habits. The work is printed entirely in the Swedish language, but the technical part of it, at any rate, can be overcome by the purchase of a grammar and dictionary, and, having these, by a little application. Some Swedish Naturalists have latterly printed their works in English; but, whilst acknowledging the boon, we are not quite sure whether they do not thereby render their labours less useful to their own countrymen,—for educational works, such as local faunistic monographs must ever be, are matters of paramount importance.

HYMENOPTERA SCANDINAVIÆ, auctore C. G. THOMSON; Tom. i (Tenthredo et Sirex, Lin.). Lundæ, 1871, 8vo., pp. 1-342.

We have here another contribution to entomological literature by one of the band of hard-working Swedish entomologists. Herr Thomson, so long known as a Coleopterist, has again turned his attention more exclusively to *Hymenoptera*, and purposes a monographic revision of the Swedish species, of which this (comprising the saw-flies) is the first part. The work is marked by so much originality, and in so high a degree revolutionizes pre-existing arrangements, both as to species and sequence, that we must be pardoned for not yet being able to express a decided opinion on many of its most striking features. Without doubt, however, the prominence given to structural characters, such as sculpture, &c., in the specific diagnoses, is a vast improvement upon older works. So is also the removal of the *Doleri* to close connection with the *Allanti* and allies, instead of retaining them in the neighbourhood of the *Emphyti*, &c., which they resemble only by the more artificial characters of alar cell-structure. Upon one point we confess to being dissatisfied. Herr Thomson has, in scarcely any one case, said even a word concerning the larvæ; and in this the works of Hartig, Zaddach, and Snellen Van Vollenhoven (who is not even mentioned), must still take precedence over his. The book is printed almost entirely in Latin; the few notes in the vernacular being chiefly of local interest.

ENTOMOLOGICAL SOCIETY OF LONDON, 20th November, 1871.—A. R. WALLACE, Esq., F.Z.S., President, in the chair.

The following gentlemen were balloted for and elected:—C. V. Riley, Esq., State Entomologist for Missouri, U.S., as Foreign Member; Lieut. B. Lowsley, and F. Raine, Esq., as Ordinary Members; and W. H. Miskin, Esq., of Brisbane, as a Subscriber.

With reference to the occurrence of *Formica herculeana* in the crop of *Picus martius*, said to have been shot near Oxford (as stated at the last meeting by Professor Westwood), Mr. Dunning remarked that he had ascertained that examples of this bird, presumably of Norwegian origin, were exposed for sale in Leadenhall Market, at the same time as the specimen was said to have occurred at Oxford. Mr. E. Sheppard considered it very singular that the only supposed British examples of the Ant should be found in the crop of a bird reputed doubtfully British. Mr.

McLachlan suggested that the spot in which the bird was said to have been shot should be searched, in order to find the Ant if possible. Professor Westwood and Mr. F. Smith remarked on the evidence of the bird being British; and Mr. Bond said that all, or nearly all, the recorded instances had been found to be erroneous. Professor Westwood promised to furnish further evidence.

Mr. Bond exhibited a series of a peculiarly small and pale form of *Lasiocampa trifid* bred for a number of consecutive years by Mr. Mifford from larvæ feeding on a species of grass on the shore at Romney Marsh; and he also stated that Mr. Mifford had bred *Lithosia ornata* from the same locality. He further exhibited malformations of *Clisiocampa castrensis*.

Mr. Stainton exhibited, on behalf of Mr. D'Orville, a variety of *Agrotis comes* (*Triphana orbata* of our old lists), from the neighbourhood of Exeter.

Mr. McLachlan exhibited a remarkable instance of mimetic resemblance between two common species of North American dragon-flies, viz., *Libellula pulchella*, of Drury, and *Platthemis trimaculatus*, of DeGeer. The ♀ of the latter mimicked either sex of the former, though the ♂ was very dissimilar. Mr. Bates thought it might be a case in which the markings repeated themselves, rather than one of actual mimicry. The matter was referred to the observation of American entomologists, in order to suggest a reason for the apparent mimicry. The question of the liability or non-liability of dragon-flies to the attacks of birds having been raised, Mr. F. Smith stated that he had seen swallows devouring *Aphodius*; and Mr. Briggs had observed a fight between a large species (*Eschera*?) and a sparrow in the streets of London, in which the former beat off its aggressor. Mr. Jenner Weir incidentally remarked that he had seen the ♀ of a species of *Aphodius* descend beneath the surface of the water in order to deposit its ova.

Mr. F. Smith exhibited the cocoons of *Tiphia taria*, Say, given to him by Mr. Riley, and avowed his belief that the larvæ of *Tiphia* devoured those of *Aphodius*.

Mr. Müller called attention to the fact that the larvæ of a *Thrips* were destructive to green peas, of which they devoured the exterior portion of the pods.

Mr. McLachlan read notes on the identification of *Myrmeleon formicaleo*, *formicarius*, and *formicalynx* of Linné, pointing out the confusion existing in Linné's descriptions, and their mis-application by later writers.

Mr. Smith's catalogue of British Hymenoptera *Aculeata* was on the table.

4th December, 1871.—The President in the Chair.

Mr. S. Stevens exhibited, for Mr. Shearwood, a remarkably dark variety of *Argynnis Aglaia* from Teignmouth.

Mr. Bond exhibited, for Mr. Doubleday, varieties or malformations of various British *Lepidoptera*.

Mr. Janson exhibited a collection of insects (principally *Coleoptera*) from the diamond fields of South Africa.

Mr. Higgins exhibited *Tetracha crucigera* of McLeay, sent to him from Sydney.

Professor Westwood exhibited a series of drawings and specimens with a view to identify *Papilio Thersander* of Fabricius, and remarked that Donovan's figure had been evidently made from a mutilated copy of the figure of the *Papilio* in Jones' 'Icones,' completed from *Charaxes Fabius*.

Mr. Müller stated that Natterer had observed the attacks of one of the Brazilian *Fulcrinae* upon dragon-flies, which formed its habitual food. Mr. Horne had not seen these insects attacked by birds in India.

Major Parry communicated a note upon the genus *Lissapterus* of H. Deyrolle.

Mr. W. F. Kirby communicated a continuation of his synonymic notes on *Lepidoptera*.

NOTES ON SOME CORSICAN INSECTS.

BY THE REV. T. A. MARSHALL, M.A., F.L.S.

(Continued from Vol. vii, p. 250.)

(WITH DESCRIPTIONS OF NEW GENERA AND SPECIES OF *HEMIPTERA*
BY JOHN SCOTT.)

I am requested to prefix a few words to the following descriptions of Corsican *Hemiptera* by Mr. Scott, who is at present in Spain. The new species here published were taken by me in the summer of 1870. *Antipalocoris* seems the most worthy of remark. It belongs to the *Notonectidae*, and is allied to *Anisops niveus*, Fab. Both species occur in the rivers of Corsica, the *Antipalocoris* abundantly, swimming in small shoals, like fishes, against the current. *Anisops*, I believe, has only been noticed hitherto as African. Its pearly-white hemelytra give it the appearance of a young *Notonecta*. The male is furnished with a conspicuous frontal horn. Of the other *Aquaticilia*, I noticed a *Naucoris* (in the larval state), probably *parvulus*, Fieb., *Limnobates*, *Velia* (winged), *Hebrus*, *Sigara*, swarming at the edges of rivers and ditches, *Plea*, *Ranatra*, and *Hydrometra naïus*, De G. Of other *Hemiptera*, the most remarkable were *Cantacader Staudingeri*, Bär., at roots of grass, Campoloro; *Harpactor humorhoidalis*, Fab., which is also the commonest species in Algeria; *Colliocoris niger*, Fieb., and *C. griseus*, Rossi; *Holotrichius* (sp. ?), in larval state, living on elm trees, and preying on the innumerable larvæ of *Galeruca calvariensis*, L., and clothed, like *Reduvius*, in a sort of grey frieze, composed of particles of dust; *Pirates strepitans*, Ramb.; *Nabis viridulus*, Spin., on the tamarisk, found also in the Camargue, near Arles; *Pyrrhocoris aegyptius*, L.; *Lygæus apuans*, Rossi, on mountain sides; *Lygæosoma reticulata*, H.-Sch.; *Nysius senecionis*, H.-Sch.; *Paromius leptopoides*, Bär.; *Henestaris*, doubtless the same as the British species; *Ophthalmicus siculus* and *O. distinctus*, Fieb., the former throughout the island, the latter on sandy grass-plats near the sea; *Aoploscelis bilineatus*, Fieb., in marshes of the Campoloro, known only as Corsican; *Megalonotus*, all the British species, and *niger*, Fieb.; *Scelopostellus cognatus*, Fieb., Corsican only; *Trapezonotus Ulrichi*, Fieb., *Deruches pulcher*, H.-Sch., *D. Sphragidimicum* Am., and *D. luscus*, Fab., all equally abundant; *Rhyparochromus Rolandri*, L., and *R. vulgaris*, Schill., and others of the genus; *Beosus quadratus*, Fab., *B. saturnius*, Rossi, and *B. Douglasi*, Fieb. (I know not whether the last has been described; it was discovered during my first visit to the

island, and found again in 1870); *Emblethis arenarius*, L.; *Cymodema tabida*, Spin.; *Macroplax Heljeri*, Fieb., abundant on hill-sides near Ajaccio, also in the pine forest near Arcachon; *Neides aduncus*, Fieb., common; *Apophymus pectoralis*, Fieb., peculiar to Corsica (very like a *Neides*, but distinct on close inspection), in vineyards near Ajaccio; *Spathocera lobata*, H.-Sch.; *Pseudophleus Waltlii*, H.-Sch.; *Ceraleptus gracilicornis*, H.-Sch.; *Coreus hirsutus*, Fieb., and *C. hirticornis*, Burm.; *Microlytra fossularum*, Rossi; *Verlusia sinuata*, Fieb., and *V. sulcicornis*, Fab.; *Centrocarenus spiniger*, Fab.; *Rhopalus Abutilon*, Rossi, *R. truncatus*, Ramb., and other *Rhopali*; *Brachycarenus tigrinus*, Schill.; *Loxostethus virens*, L.; *Calocoris Ticinensis*, Meyer-Dür, and *C. vandalicus*, Rossi, and others; *Pycnopterna striata*, L.; *Cyphodema Meyer-Düri*, Fieb.; *Camaronotus clavatus*, L.; *Rhaphidogaster griseus*, Fab., abundant on poplar trees; *Rhacostethus lunatus*, Linz.; *Eusarcocoris Heljeri*, Fieb., and *E. binotatus*, Hahn; *Mormidea*, all the species, including *varia*, Fab. (which is not a var. of *baccarum*, L.; I found plants infested with it alone); *Cimex distinctus*, Meyer-Dür, and others; *Strachia festiva*, L., *S. picta*, H.-Sch., and others; *Zicrona cærulea*, L.; *Podops siculus*, Costa; *Ælia Germari*, Küst., and others; *Ælioides*, *Sciocoris umbrinus*, Wolff, and *S. marginatus*, Fab.; *Brachypelta aterrima*, Först., on the sea-shore at Ajaccio, under spurge and debris, and in the mountains near Bastelica; *Cydnus Heljeri*, Fieb.; *Graphosoma semipunctata*, Fab., and *G. lineata*, L.; in Corsican examples of the latter the red stripes are replaced by yellow; *Ancyrosoma albolineata*, Fab.; *Odontotarsus grammicus*, L., and *O. caudatus*, Klug (the latter is rarely found; it is also among some Spanish Hemiptera sent me by Dr. Sharp); *Odontoscelis dorsalis*, Fab., and *Coptosoma globus*, Fab.

The ruthless destruction of about 200 specimens by sailors or porters at Marseille, on the way home, has perhaps limited the list of novelties found by Mr. Scott among my *collectanea*. When the war broke out, I was at Bastelica, and, of course, without a passport. On landing at Marseille, I found that that preposterous nuisance was revived, and the absence of the document gave rise to the usual amenities. A long wrangling conference terminated in my consenting to "establish my identity," which was happily, though not conclusively, accomplished by the production of the old envelope of a letter. Meanwhile, the luggage had fallen a prey to the sportive fury of the *facteurs*, and the labours of several weeks were annihilated. The embarrassment of the passport official on this occasion was truly amusing. He had orders to pass no one without proper papers, and very few on

board the steamer were provided with passports. He had some confused notion of "identification," for which he clamoured incessantly. I might have passed as 'Lord Jones,' if I had chosen. It was vain to plead corporeal presence, as a proof that I was myself; but the *litera scripta* acted on him like magic.

St. Albans: October 14th, 1871.

Family.—LYGÆIDÆ.

Genus.—MACROPTERNA, Fieb.

MACROPTERNA BICOLOR, Scott, *sp. n.*

Black and white, somewhat oval.

Head black, slightly shining, thickly and deeply punctured; *antennæ* yellow, first joint black, fourth brown.

Thorax: *pronotum* black, slightly shining, thickly and deeply punctured, except a small space on either side of the centre a little before the middle of the disc; *scutellum* black, punctured, except a short, longitudinal, posterior, central keel; *elytra* white, or very pale yellowish-white; *clavus*, nerves prominent; *corium*, base very narrowly black, apical half black, nerves prominent; *membrane* black, the anterior and posterior margins narrowly, and an oval patch, having its upper margin in a line with the apex of the cuneus, white, membrane suture, very narrowly but distinctly white, nerves alternately darker or lighter as they pass through the respective parts; *sternum* black, thickly punctured; *mesosternum* on the sides yellowish-white; *legs* black; *thighs* black, shining, first pair at the apex white, second and third brown; *tibiæ* whitish, base of all the pairs very narrowly black, apex more or less brownish; *tarsi* brownish, third joint darker.

Abdomen, underneath black or pitchy-black.

Length, $\frac{3}{4}$ — $\frac{7}{8}$ line.

This insect bears some slight resemblance to *Microplax plagiatus* in the markings on the membrane; but, while, in the last named, the character assumes a J-form between the second and third nerves, in *M. bicolor* the character is much broader and reaches the inner margin, and may be roughly compared in shape to the ordinary rounded form of the handle of a walking-stick or umbrella.

Genus.—BRACHYPLAX, Fieb.

BRACHYPLAX LINEARIS, Scott, *sp. n.*

Narrow; head and pronotum brownish-yellow, thickly and rather deeply punctured.

Head brownish-yellow or reddish-brown, somewhat dusky across the base of the central lobe; *antennæ* black, stout, basal joint reddish-yellow; *eyes* red.

Thorax: pronotum brownish-yellow, on the sides more or less dark brown, posterior third greyish-white; scutellum black, wrinkled transversely; elytra greyish-white; clavus at the base punctured as far as in a line with the apex of the scutellum; next the suture a distinct row of punctures; corium slightly contracted about in a line with the middle of the clavus, and with a row of fine punctures next the anterior margin; membrane very long, very pale fuscous; legs yellow; thighs, first pair very stout, the three teeth at the apex, which gradually diminish in size, are black; tibiæ pale yellow; tarsi, third joint of all the pairs slightly dusky at the apex. Length, $1\frac{1}{3}$ line.

The above insect bears some little resemblance to the *Stenogaster* (*Oxycaenus*, Fieb.) *pallens*, H.-Schf., Wanz. Ins., vol. ix, p. 314, fig. 963; but it is much more linear, and has not the same stature.

Genus.—LITOSOMA, Doug. and Scott.

LITOSOMA ATRICAPILLA, Scott, *sp. n.*

Narrow, green, clothed with depressed black hairs.

Head: antennæ pale yellowish, first joint with a broad black ring before the apex, second narrowly black at the base, third and fourth joints brownish, the former narrowly piceous at the base; eyes pitchy-black.

Thorax: pronotum and scutellum green, the former with a distinct transverse channel before the middle; elytra green, clothed with depressed black hairs; membrane pale, inner margin black; lesser cell black, apical half of the larger cell, and a broad margin exteriorly, fuscous-brown, cell nerves white; on the anterior margin, below the apex of the cuneus, and from the apex of the lesser cell nerve, a longitudinal black streak, the latter the longer of the two, the apex enclosed between the streaks blackish; sternum green; legs green; thighs, first and third pairs on the lower margin with a pitchy spot, that on the former small and somewhat indistinct; tibiæ pale, very narrowly brown at the apex; tarsi yellowish, base of the first joint and third entirely brown.

Abdomen green.

Length, 1 line.

The characters of the antennæ and thighs are sufficient for the immediate recognition of this insect. The black hairs are also peculiarly dense; but, as the specimens are rubbed, I am unable to say whether these were originally uniform throughout, or in bands, or distributed in patches.

Genus.—MIMOCORIS,* Scott, *g. n.*

Elongate; corium slightly narrowed from the base to the middle, from thence to the base of the cuneus gradually widened.

Head long, pentagonal, very much deflected, wider across the eyes than long; antennæ shorter than the body, first joint shortest, about half its length reaching

* *Mimos*, an imitator; *koris*, a bug.

beyond the end of the face, second clavate, four times as long as the first, third and fourth filiform, the former not half the length of the second, the latter about half the length of the third; *eyes* large, prominent, almost their whole width projecting beyond the anterior margin of the pronotum; *rostrum* reaching to the third pair of coxæ, first joint stout, as long as the head.

Thorax: *pronotum* very considerably deflected towards the head, anterior margin about the width of the head between the eyes, and with a narrow collar; sides almost straight, the width across the posterior margin at least three times greater than the anterior, slightly concave across the scutellum, and rounded towards and at the hinder angles; *scutellum* triangular, very convex, considerably higher than the clavus, depressed in the centre; *elytra* longer than the abdomen, slightly tapering from the base to the middle, and from thence gradually widening out to the base of the cuneus; *cuneus* long; *legs* long, thin, third pair longest; *tibiæ*, third pair somewhat bent, and slightly thickened below the base; *tarsi* short, basal joint shortest, second and third of almost equal length.

MIMOCORIS CAMARANOTOIDES, Scott, *sp. n.*

Dark brown, with a velvety appearance, and sparingly clothed with almost erect, short, dark hairs.

Head: *crown* and *face* reddish or somewhat fuscous-brown, posterior margin of the former slightly raised; *antennæ* yellow, second joint slightly brownish-yellow, base narrowly, and apical third black, third yellow, apical half brown, fourth brown, apex narrowly reddish; *eyes* dark brown; *rostrum* brown, apex black.

Thorax: *pronotum* dull red, slightly shining, coarsely wrinkled transversely, across the posterior margin more or less broadly brown; *scutellum* dark brown, shining, or with a slight reddish shade, posterior portion as far as the deep depression finely wrinkled transversely; *elytra* dark brown, with a velvety appearance, with a curved silvery-white band, extending from near the base of the anterior margin of the corium, where it is widest, across the clavus to the apex of the scutellum; posterior margin silvery-white, base very narrowly silvery-white; across the middle of the disc, and in an oblique direction towards the apex of the interior margin is a faint milky-white irroration, more or less broad and distinct in certain lights; *cuneus* long, dark brown; *legs* clear reddish-brown; *thighs*, third pair pitchy-red, apex of all the pairs on each side with a distinct white patch; *tibiæ* yellow, base of the first pair narrowly, and of the second pair broadly, fuscous, third pitchy-red, apical third pale yellow; *tarsi* piceous, second joint yellowish.

Abdomen, underneath black.

Length, 2 lines.

This insect, at first sight, might readily be mistaken by any one for a species of *Camaronotus*; but the projecting eyes, red pronotum, and different position of the white bands on the elytra at once mark its distinctness.

Three specimens were taken by Mr. Marshall.

(To be concluded in our next.)

CONTRIBUTIONS TOWARDS A KNOWLEDGE OF THE LIFE-HISTORIES
OF CERTAIN COLEOPTERA.

I.—DENDROPHAGUS CRENATUS, Payk.

BY F. BUCHANAN WHITE, M.D.

With the exception of a description by C. von Gernet in the *Horæ Soc. Ent. Rossicæ*, vol. vi, 1868 (*Beiträge zur Käferlarvenkunde*, zweiter Beitrag, p. 19), of two larvæ supposed to belong to this species (but which were not reared), very little seems to have been written regarding the life-history of this rare and interesting beetle; probably, for the best of all reasons, that very little is known. Having perhaps a more intimate acquaintance with it than any one else in Britain, I am glad to be able to throw a little more light on the subject.

The larva has been supposed by some to be carnivorous, but it is truly phytophagous, feeding on the inner layer of the bark of dead trees of the Scotch-fir (*Pinus sylvestris*), and more rarely of the Larch (*Larix europæus*). The perfect insect lives in the same situations, preferring places where the bark is rather loose and cracked. In such places it remains quiet during the day, resting either upon the bark or upon the wood, but, when disturbed, it runs off with considerable celerity. Towards night-fall, the beetle seems to come forth from its hiding-place, as at least in one instance it has been captured "coursing rapidly, towards evening, over a bare fir log" (E. C. Rye, *E. M. M.*, iii, 63).

In the perfect state, *Dendrophagus* has been captured in May, June, July, August, and September; and, though I am not aware that it has been observed, it probably passes the winter in the perfect state, the specimens taken in May, June, and July, having probably hibernated. As, however, larvæ of different sizes are to be met with throughout the summer, it is possible that the spring specimens of the beetle may have been recently excluded from the pupæ, though all my specimens emerged in August.

Larvæ have been noticed in every month from May to September; and frequently larvæ of different sizes (and probably, therefore, of different ages) were found at the same time and place. Further observation is required before the duration in the larval state can be ascertained. It is not improbable, however, that it continues for at least one year, if not longer. Some larvæ, at least, hibernate when nearly of full size. The duration of the pupal state is from a fortnight to three weeks. In August, soon after their exclusion from the pupa, several specimens were observed *in cop*. I did not succeed, however,

in ascertaining that any eggs were laid, and it is not improbable that the ovipositing does not take place till the following spring or summer.

The probable course of existence of *Dendrophagus* is, I think, this:—the eggs are laid in spring and early summer by hibernated females; the larvæ feed for twelve or fourteen months, becoming pupæ the second summer after their exclusion from the egg, and the beetles appear about August.

Dendrophagus seems to prefer a fallen tree to one still standing, though I have seen a specimen taken (by Mr. Hislop) off the horizontal part of a standing tree. The most productive tree I met with was a fallen one, whose trunk was prevented from coming in contact with the ground by the branches; this tree produced four specimens. The manner in which I succeeded in rearing the larvæ was by keeping them along with pieces of bark in a jam-pot, with top ground and covered by a square of glass, the whole being placed in a dark cupboard. A good look out should be kept for mould, and care be taken *not* to introduce in the bark the larvæ of *Quedius lævigatus* or other marauders.

Description of the larva: Dr. Sharp having drawn up a description of the larva, and kindly placed it at my disposal, I give it in preference to making another.

“Of a pale yellowish-white colour, elongate, depressed and parallel, with rather long antennæ. These are of three joints, and are as long as the head and following segment; the first joint is only about half the length of the second, but twice as stout; the third joint is very slender, and about as long as the second.

“The lobe of the maxilla is fringed at the apex, and bears a three-jointed palpus, the third joint of which is more slender and shorter than the second, the basal joint is very short and obscure, and should perhaps be rather considered as the support of the palpus than as a true joint.

“The labial palpi are short, stout, and two-jointed, the terminal joint about twice as long as the basal one.

“The mandibles are very short and stout, the extremity is abruptly bent inwards, is slender, sharp, and three-toothed.

“The six legs are rather long, and each is terminated by a single claw.

“The segment next to the head is quadrate and transverse, of a different shape to the others.

“The upper side of the twelfth segment bears two long, slender antenna-like processes, directed backwards; these processes are three-jointed, the last joint being long, slender, and almost like a hair. This segment has also each posterior angle produced at the side, behind, into a stout spine.

"The thirteenth segment is pointed, and very much narrower than the others.

"This larva is very agile and quick in its movements, and, when disturbed, moves the hinder part of its body quickly from side to side. It feeds on the inner portion of the bark of the Scotch-fir, when this is in a decaying condition."

The first larva that I saw was found by Mr. Hislop, who suspected that it was the larva of *Dendrophagus*, but did not succeed in proving it to be so by rearing it. The larvæ described by C. von Gernet (*loc. cit. supra*), which were found under the bark of a fallen birch near Murino (in the Government of St. Petersburg), evidently belong to another genus.

Description of the pupa: yellowish-white, oblong, depressed, and tapered towards the tail. Head deflected under the thorax, with a hair-tipped spine in front of each eye. Eyes brown. Antennæ—first joint extending at right angles to the head, the others at right angles to the first joint and parallel with the body, passing over the two first pair of legs and under the third; apex of each joint, except the first with a circlet of short, stout spines.

Pronotum quadrate, excavated in centre, angles rounded, margin furnished with hair-tipped spines, two from the front margin; at each anterior angle a group of three, with their bases connected by a membranous expansion; at each posterior angle a group of two, with their bases connected as in the anterior spines. Elytra not conspicuous, closely appressed, and directed under the sternum.

Legs curved under the thorax. Femora protruding and directed backwards; from the apex of each spine four tubercles, the two anterior of which are hair-tipped, except in the third pair of legs, where only the lower anterior tubercle is hair-tipped.

Hind-body with a central depressed line; each segment with, above the sides, a depressed tubercle pointing backwards, and with an oblique, raised line running from the base of each tubercle towards the preceding segment. Fourth, fifth, and sixth segments with a long hair-tipped spine on the extreme side, below the tubercle.

Under-side. Elytra reaching to nearly the fourth segment of the hind-body.

Length 4 lines.

The larva, when about to assume the pupal state, attaches itself firmly to a piece of bark by the thirteenth segment, and the pupa remains attached by its anal segment to the larva-skin.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 12).

BY H. W. BATES, F. L. S.

Genus MIZOTRECHUS, nov. gen.

Gen. Trechico (Leconte) *proxime affinis, at corpus robustius, magis elongatum, mentum medio dentatum, tarsi breviores, crassiores. Caput robustum, collo crasso, fronte foveis duabus latis leviter impressis signata. Mandibulæ longe exsertæ, modice falcatæ. Maxillæ longe exsertæ, intus spinis longis armatæ. Palporum articulus ultimus ad basin penultimo latitudine æqualis, gradatim acuminatus. Mentum dente mediano forti armatum. Thorax quadratus, postice leviter angustatus, angulis distinctis. Antennæ breves, sub-moniliformes, articulis a 4^{to} quadrato-ovatis, compressis, pubescentia a tertii apice incipienti. Elytra ad apicem lata, oblique subtruncata, suprâ depressa, striis 8^{ca} et 9^{ma} antice conjunctis, postice paulo gradatim divergentibus, 8^{ca} per apicem ducta; interstitio tertio haud tripunctato. Pedes robusti, tarsi suprâ hirsutis, articulis crassis, ad basin vix angustatis.*

Besides the dentate mentum, thick tarsal joints and square thorax, this genus differs from *Trechicus* in the absence of the three setiferous punctures from the third elytral interstice. The mandibles and maxillæ also are much more exserted, approaching *Diploharpus* in this respect; the terminal joint of the inner maxillary palpi is also very much shorter than the basal.

I have compared the species in these respects with *Trechicus umbripennis*, Lec., and *Tr. fimicola*, Woll.

MIZOTRECHUS NOVEMSTRIATUS, n. sp.

Elongatus, robustus, parallelipedus, rufo-castaneus; thorace magno, postice rectè angustato, angulis posticis dentiformibus, prominulis, margine postice dilatato-expanso, suprâ impunctato; elytrorum striis omnibus impressis, indistincte punctulatis, ad basin sub-oblitteratis, ibique 1^{ma} et 2^{nda} in foveam basalem disinentibus, striola scutellari distincta. Long. 3 lin.

Ega.

MIZOTRECHUS LEVILATERIS, n. sp.

Minus parallelus, elytris oblongo-ovatis, thorace sesqui latioribus; obscure castaneus, oris partibus, antennis, pedibus, abdomineque fulvo-testaceis; thoracis lateribus antice leviter rotundatis, angulis posticis distinctis, rectis, haud prominulis; elytris sub-concavis, striis 1—5 acutè impressis, impunctatis, basin haud attingentibus, 6^{ta}—7^{ma} sub-oblitteratis, 8^{ca} postice flexuosa, ibique margine ocellato-punctato. Long. 2½ lin.

The sutural or first stria ends abruptly at a distance from the scutellum, the others are successively a little longer, but the third to

the seventh are obliterated before the apex; the eighth, as in *Diplo-harpus*, is prolonged nearly to the suture, becoming sharply impressed, and leaving a sharp ridge on its inner side.

One of my specimens has three joints of the anterior tarsi distinctly dilated, with broad, triangular joints, and is evidently a male.

Ega.

MIZOTRECHUS OZENOIDES, n. sp.

Oblongus, vix convexus, nigro- vel rufo-castaneus, politus, capite (epistomate rufo excepto) nigro, elytrorum apice indeterminate, suturâ, et interdum margine pallidioribus; foveis frontalibus magis impressis, extus obliquis; antennis crassis, articulis 4—10 transversis; thorace quadrato, postice parum angustato, angulis posticis obtusis sed distinctis; elytris ad apicem obtuse rotundatis, suprâ politis, lævibus, vel striis nonnullis prope suturam certo sitû apparentibus, stria 8^{va} apicem versûs fortiter impressa, ibique margine punctigero lato.

Long. $1\frac{1}{2}$ lin.

By its thick antennæ, smooth elytra, shape and colours, much resembling certain species of *Pachyteles* (sub-fam. *Ozæninæ*).

Ega and St. Paulo, Upper Amazons.

MIZOTRECHUS PRÆCISUS, n. sp.

Oblongus, vix convexus, rufus, capite suprâ nigro, elytris castaneis, latera versûs obscurioribus; antennis minus crassis, articulis 4—10 oblongo-ovatis; thorace breviori, valde transverso, lateribus rotundatis, postice magis quàm antice angustatis, angulis posticis obtusis, sed distinctis; elytris ad apicem obtuse rotundatis, striis 6 distinctis punctatis, 7^{ma} obsoleta, 3^{tia}—6^{ta} ad apicem abbreviatis.

Long. 2 lin.

R. Tapajos.

MIZOTRECHUS LÆVIGATUS, n. sp.

Elongato-ovatus, planatus, politus, capita suprâ, thoracisque disco nigris, elytris rufo-castaneis, reliquis fulvo-testaceis; thorace quadrato, transverso, postice modice angustato, antice vix rotundato, angulis posticis obtusis, margine basali utrinque obliquo; elytris obtuse rotundatis, suprâ obsolete striatis, striâ 8^{va} postice flexuosâ, acute insculptâ; antennis robustis, articulis 4—10 oblongis.

Long. 2 lin.

Received from Paris with the names "*Trechus majusculus*, Chaud.," and "*Acupalpus ingratus*, Chaud.," but no such species have been, to my knowledge, described.

Vera Cruz, Mexico.

MIZOTRECHUS VIXSTRIATUS, n. sp.

Elongato-ovatus, planatus, politus, castaneus, capite suprâ nigro, antennis, oris partibus, pedibusque fulvis; thorace quadrato, transverso,

postice recte vix angustato, antice vix rotundato, angulis posticis obtusis; elytris ad apicem late rotundatis, suprâ striis sex vix impressis, 8^{va} postice flexuosâ, acute insculptâ; antennis robustis, apicem versûs sub-clavatis; tarsis angustioribus. Long. 2 lin.

Extremely near *M. lævigatus*, differing in the elytra being more distinctly striated, and the disc of the thorax on each side not being black. I have compared two examples of each. The tarsi (especially the posterior) are much more slender than in the typical species, and are but slightly pubescent above; but the mentum is decidedly toothed, and the species belongs therefore rather to *Mizotrechus* than to *Trechicus*.

Rio Janeiro, Brazil, at Tejuco. From the collection of the Rev. H. Clark.

Genus LACHNACES, nov. gen.

Gen. Olisthopo vel Badistro similis sed gen. Eucæro vere affinis. Corpus late sericeo-iridescens. Caput triangulare, postice modice angustatum; oculis magnis, prominulis, fronte vix bi-impressâ. Labrum elongatum, quadratum, antice leviter sinuato-truncatum. Mandibulæ elongatæ, ad apicem graciles, falcatæ. Palpi valde elongati, pubescentiâ densâ vestiti, articulo ultimo elongato, apice acuminato, precedenti multo grossiori. Antennæ valde elongatæ, filiformes, graciles, articulis 3—11 pubescentiâ densâ vestitis. Mentum haud profunde emarginatum, medio breviter obtuse (vel haud) dentatum. Thorax transversus, baseos medio anguste lobato. Elytra fortiter striata, ad apicem obtuse late rotundata; margine basali et humerali explanato-productis, striolâ basali nullâ, interstitio 3^{tio} tri-punctato, striâ marginali per apicem continuatâ. ♂ Tarsi antici articulis tribus fortiter dilatatis, 1^{mo} elongato-triangulari; 2—3 elongato-cordatis, subtus bi-seriatim squamosis.

The curious little *Carabidæ* forming this genus, have somewhat the facies of *Olisthopus*, with the strong iridescent gloss of the *Loxandri*, near which I had placed them; but the densely pubescent and acuminate palpi and lobed thorax show their near relationship with *Eucærus*, next to which the genus must henceforth be ranged. The palpi are extremely long, the second and third joints of the maxillary especially so; the fourth is also elongated, but of an elongate ovate shape, with gradually pointed tip.

LACHNACES SERICEUS, n. sp.

Oblongus, latus, piceo-niger, lætissime sericeo-iridescens, oris partibus, antennarumque articulis 4 basalibus (cæteris pallidioribus) rufo-testaceis; thorace valde transverso, lateribus æqualiter fortiter rotundatis, angulis

posticis nullis, anticis obtuse rotundatis, baseos medio anguste lobato-producto, suprâ convexiusculo, lævi, lineâ dorsali suprâ lobum fortiter impressâ, marginibus angustis, explanato-reflexis, piceis; elytris fortiter simpliciter striatis, certo sitû sericeo-opacis, iterumque splendide iridescentibus, suturâ, marginibus reflexis, epipleurisq. rufo-piceis.

Long. 3½ lin. ♂.

Larger than any *Eucærus*, and, like the following, of totally different facies from any of that genus.

Ega.

LACHNACES OLISTHOPOIDES, n. sp.

Oblongus, angustior, nigro-piceus, iridescens; oris partibus, antennis, pedibusque rufo-testaceis; thorace transversim quadrato, angulis posticis obtusis, rotundatis, lateribus æqualiter rotundatis, baseos medio lobato-producto, lineâ dorsali suprâ lobum fortiter impressâ, basi minute strigoso; elytris modice striatis.

Long. 2¼ lin. ♀.

Ega.

LACHNACES BADISTRINUS, n. sp.

Oblongus, rufus, læte iridescens, capite suprâ (epistomate excepto) nigro, elytris utrinque vittâ latâ, indeterminatâ, fuscâ notatis; thorace transversim quadrato, angulis anticis acutis, posticis distinctis sed obtusis, lateribus modice rotundatis, baseos medio modice producto, margine explanato ad angulos posticos paulo latiori et reflexo; elytrorum striis modice impressis.

Long. 2 lin. ♀.

In this species, I observe no tooth in the emargination of the mentum.

Ega.

EUCÆRUS OPACICOLLIS, n. sp.

Piceo-fuscus, capite thoraceque alutaceis, opacis, elytris sericeo-nitentibus, oris partibus, antennis, pedibusque flavo-testaceis; thorace late cordato, postice sinuatim fortiter angustato, angulis anticis rotundatis, posticis obtusis sed distinctis, basi late breviter lobato, marginibus lateribus explanatis, prope angulos posticos dilatatis; elytris fortiter æqualiter striatis.

Long. 2½ lin.

Larger, and of somewhat different facies from the other *Eucæri*, for which reasons it had got astray in my collection among the species of *Lachnaces*. It is allied to *Eu. sulcatus*; but differs from all species in its minutely and beautifully shagreened or strigose head and thorax, unicolorous antennæ, &c.

Ega.

DESCRIPTION OF A NEW SPECIES OF ANISOTOMA FROM GREAT BRITAIN.

BY E. C. RYE.

ANISOTOMA LUNICOLLIS, *sp. n.*

Ovato-oblonga, convexa, nitida, ferruginea, antennarum clavâ graciliore, fuscescente, articulo apicali quam penultimo angustiore; prothorace elytris paulo latiore, lateribus (ac præcipue apicem versùs) valde rotundatis, apice emarginato, basi truncato, suprâ subtilius crebre punctulato; elytris punctato-striatis, punctis crebris minoribus, interstitiis leviter elevatis sat crebre subtiliterque punctulatis; pedibus intermediis posticisque crassiusculis, breviusculis, tibiis anticis linearibus.

Long. corp. $1\frac{1}{3}$ lin. (Anglic.).

Maris tibiæ intermediæ ad apicem dilatatæ leviterque incurvatæ, tarsis crassiusculis; femora postica compresso-dilatata, subtus ante apicem denticulatum sinuata, tibiis haud elongatis, paulo incurvatis, leviter sub apicem incrassatis.

Intermediate between *A. calcarata* and *A. hybrida*; differing from the former (of which it equals average examples in size) as follows: its thorax is wider, with the sides so rounded that the usual anterior angles are entirely—and the posterior angles almost entirely—obliterated; and with the base truncate, there being but the faintest possible indication of the sinuations before the posterior angles: its antennæ have a smaller club: its build is rather more oblong, the contraction of the sides of its elytra towards the apex not commencing so near the shoulder: the punctures of the striæ of its elytra are more closely packed and not so large, those of the interstices (which are not quite so flat) being rather more evident and decidedly more numerous: and the hind legs of its male are scarcely perceptibly elongated, the femora having only a minute denticle at the apex beneath.

From *A. hybrida* it differs in its somewhat less oblong build, its wider thorax, which is less closely punctured and has no vestige of anterior angles, the slightly stronger punctuation of the striæ of its elytra, which exhibit no trace of transverse sub-strigosity, and the denticulated femora of its male (*cf* Kraatz, Stettin. Ent. Zeit., 1852, 300, for ♂ characters of *A. hybrida*, unknown to Erichson).

The points of structure indicated above seem to render comparison with any other recorded European species unnecessary.

Of this interesting insect, five examples (all ♂) were taken by the indefatigable and successful Mr. R. Lawson, in flood-refuse near Scarborough; and I am indebted to that gentleman for two of these

specimens. I have also seen a small ♀ example (named, with a query, *hybrida*) in Mr. G. R. Waterhouse's collection, taken in early summer at Sydenham, and which I think must be referred to this species.

10, Lower Park Field, Putney, S.W. :
January, 1872.

Note on the occurrence in England of Hydnobius spinipes, Gyll.—Both *Hydnobius punctatus*, Schmidt, and *H. spinipes*, Gyll., are included in the 1st and 2nd editions of Mr. Crotch's catalogue; but the former of these species alone is recognized in the catalogue recently published by Dr. Sharp. As, however, I have carefully examined undoubtedly British individuals answering to the descriptions of *H. punctatus* and *H. spinipes* given by Thomson (who points out Erichson's erroneous reference of both to one species), I have thought it advisable again to register the latter as indigenous, and to give brief characters for the two insects.

H. PUNCTATUS, Schm., Er.; Thoms., Sk. Col. iv, 27. This is of the size of an average example of *H. punctatissimus* (viz., $1\frac{1}{4}$ lin., Engl.), which it most resembles, and from which it may be known by its clear testaceous colour; its thorax being not so flat and more rounded in front; its elytra having the rows of interstitial punctures almost as deep and as regular as the usual striae, and more closely packed, so that the surface is obsoletely and obliquely transverse-strigose; and by its male having a tolerably large tooth-shaped spine on the under side of the posterior femora, at some distance from the apex, instead of the whole femur being compressed and produced into a broad recurved tooth at the apex, as in ♂ *punctatissimus*.

In addition to the localities already recorded for this species, it may be observed that one or two examples of it have been taken near Scarborough by my friend Mr. T. Wilkinson, to whom I am indebted for my sole type.

H. SPINIPES, Gyll.; Thoms., l.c., 29. This is considerably smaller than *H. punctatus*, being only a little larger than *strigosus*; and may be distinguished from the former, apart from size, by its longer thorax, which is much more finely punctured, and by its elytra being also much more finely punctured, and more evidently obliquely transverse-strigose.

From *H. strigosus* it may be known by its stouter build and broader legs, the less evident strigosity of its elytra, and the stouter spine on the under side of the posterior femora of its male.

I possess a single example (a ♂, having the posterior femora toothed beneath much as in *punctatus*), taken near Croydon.—ID.

Note on the occurrence of Homalium rugulipenne, Rye, on the Welsh coast.—As this insect has apparently remained unique in my collection since it was described in 1864, it was with great pleasure that I recently found three specimens of it (agreeing *ad punctum* with my type) among some beetles sent to me for determination by Mr. Edwin Roper Curzon, who has, in the most liberal manner, presented me with two of them. Mr. Curzon informs me that the species was very abundant indeed under seaweed on the sand hills at Newton Nottage, Glamorganshire, in November, 1870, but only in one spot, where a storm had thrown up the weed

above the usual high-water mark. The plebeian *Cercyon littoralis* and *Philonthus antholoma* swarmed with it. My own impression as to my original specimen (for it was taken long before I gave any attention to the *Brachelytra*) has always been that it was taken on the shores of the Thames, below Gravesend: and also that my friend, Mr. G. Lewis (now in Japan), had more of it in his collection.—ID.

Note on the earlier stages of Hypera polygoni.—At Brandon, last summer, I noticed that many shoots of *Lychnis vespertina* were prevented from growing, and formed into pseudo-galls, resembling great buds three or four inches long, the leaves being all thickened and turned in at the tips. Some of these I secured for my friend, Mr. H. W. Kidd; and, happening to open one of them, saw plenty of the minute orange-coloured larvæ of a *Cecidomyia*, and two larvæ sufficiently like those of internal-feeding *Lepidoptera* to deceive me, especially as I took care not to disturb them, but closed up the gall and put it into a tin box. A few days after, I noticed that they had formed curious globular cocoons of silken net-work; if I recollect rightly, *outside* the gall; and some time afterwards a specimen of *Hypera polygoni* emerged from each. There were three of them, one larva being overlooked at first. They were, I think, eating the substance of the leaves forming the gall. The œconomy of this species is, I am aware, already recorded; but the plant affected in this instance is so much at variance with that from which the insect takes its name, that these notes may not be altogether uninteresting.

The following rough description of the larva was made at the time:—

“Wrinkled, thickest in the middle, flattened beneath; bluish-green, dorsal vessel pale yellow, spiracular line and feet yellow; head black, very small. Length about half an inch.”—CHARLES G. BARRETT, 5, Heigham Road, Norwich, 8th December, 1871.

Note on Ceuthorrhynchideus Chevrolatii.—As bearing upon the question whether specific value is to be correctly attributed to this insect, I may note that during the past summer I have found it on the slope of the S. E. Railway bank, between Ashford and Hythe Stations, in some small quantity, but in an exceedingly restricted space. Sporadic individuals have also occurred to me in other parts of this neighbourhood.—W. TYLDEN, Stanford, Hythe, December, 1871.

Note on habitat of Atomaria fimetarii.—The name of the fungus in which I found this species (see p. 160 of the present vol.) is *Coprinus comatus*. It is generally distributed, but found most plentifully in burying grounds, growing in abundance in those of Chelsea Hospital; and should be looked for in August and September.—H. HUTCHINSON, 21, St. Anne's Street, Cemetery Road, York.

Instances of the sudden and unaccountable disappearance of particular species of insects.—In the beginning of June, 1867, I found *Gonioctena pallida* here, together with a green larva, which I supposed to be the larva of that insect, abundantly, upon a row of hazel bushes; in the next year the beetle did not appear till October, and I have never found it or its larva again, although I have tried at all times of the year for it during 1869, 1870, and 1871. *Orsodacna cerasi*, also to be found

(although not so abundantly) upon flowers in the neighbourhood of Studley, in 1867, has never once made its appearance since. From dead leaves and decayed sticks not 80 yards from my door, *Agathidium varians* was to be had by hundreds in 1867; this insect also I have never found since that year.

I am completely at a loss to know what becomes of a species that is not to be found the year after it has been so abundant; in the case of the *Agathidium*, I am especially foiled, as this insect was so very abundant in 1867; and, although I have hunted for it repeatedly through subsequent years, I have never taken even one example; yet the place where it was originally so common has never been disturbed by anyone but myself, and is, to all appearances, in precisely the same condition as in 1867.—EDWARD A. WATERHOUSE, Fountains, Ripon, Jan. 9th, 1872.

Note on Argynnis Adippe and A. Niobe.—In answer to Mr. Doubleday's note in the last number of this Magazine, I need only say that I fear he has given me credit for a marvellous imagination, if he really supposes that I pretend to distinguish *A. Adippe* and *A. Niobe* on the wing; but I think he will himself admit that the two remotest variations of the two forms are readily distinguishable when in the net. Again, as to the occurrence of the two forms in *coitû*, I never supposed it to be a conclusive 'proof' of their identity; but, considering the fact that Freyer bred these insects from the larva for several years, and at the end of his experiments was about as little disposed to consider *A. Adippe* and *A. Niobe* distinct as when he began, and also considering his statement that the relative number of the one form to the other varied considerably in different districts, I think the capture of a pair taken in *coitû* is strong evidence against the distinctness of the two forms.—A. G. BUTLER, British Museum, 1st January, 1872.

How many times does the larva of Arctia caja change its skin?—Newport (Article 'Entomology' in Todd's 'Encyclopædia of Anatomy and Physiology,' p. 875) quotes Kirby and Spence as authority for the statement that *Arctia caja* moults *ten times*. Is this a fact? If not, I should like to know how many times it *does* moult.—A. S. PACKARD, JUN., Salem, Massachusetts, December 22nd, 1871.

Notes on the habits of Liparis salicis.—In July, 1870, the poplar trees in Sheerness Dockyard were almost stripped of their leaves by the larvæ of this species, and towards the end of the month thousands of the pupæ might be observed between partially eaten leaves, attached to the trunks of the trees, to palings under copings, and in fact almost anywhere, sometimes in clusters of a dozen or more together. The perfect insects began to appear the first week in August, and by the middle of that month were out in prodigious numbers. They commenced to fly just before dusk, and during the time they were most plentiful, especially if it happened to be a close damp evening, they came forth in great strength and swarmed round the trees. At times it was quite bewildering to look at them, they were in such quantities. Towards the end of the month, white patches of eggs were to be seen on the trees, sometimes high up on the branches; but the parent moth was not particularly careful for the future prosperity of her offspring, as she frequently deposited her eggs on walls, doors, buildings, &c., far away from

any tree, and where the young, as a matter of course, would perish for want of food. The larvæ emerge in about fourteen days, feed for a short while, and then retire under loose bark, &c., where they spin tiny white cocoons in which to pass the winter. These cocoons are not easily found, as, besides being of small size, they soon assume the colour of the bark. About the end of April the young larvæ commence to feed again, and may then be observed, on any warm day, stretched at full length on the trunks of the trees and on the lower branches. They are grimy little fellows when small, and difficult to detect; but, when full-grown, are nearly the most conspicuous larvæ we have. They appear to be almost exempt from the attacks of ichneumons, as I can only remember one instance of those parasites in a larva; and birds apparently will not eat them. On one occasion I presented one to a tame starling; the bird inspected it for a moment or two as it crawled on the floor, as if he could not exactly make up his mind whether it were fit to eat or not; then, no doubt fancying that a creature adorned with such brilliant colours would make an exceptionally dainty dish, he seized and gave it a good shaking (as all birds do when they pick up a caterpillar), but, instead of swallowing it, he jerked it from him to a considerable distance with unmistakable signs of disgust, and would never afterwards touch one; he treated the larvæ of *neustria*, *auriflua* and *chrysorrhæa* in the same scornful manner. I do not know whether it has been noticed before, but I observed that the larvæ of *salicis* spun cocoons in which to undergo their changes of skin up to the fourth change, but not beyond that.—GERVASE F. MATHEW, Admiralty House, Devonport, 16th December, 1871.

Natural history of Apamea unanimitis.—On the 1st of March, 1868, I found from grass a larva unknown to me at that time, which I figured, and on the 3rd it spun up; the moth appeared on the 5th of June following, and proved to be of this species. On my comparing my figure of this larva with that of *unanimitis* by Hübner, the difference between them was so great as to lead me to suppose mine could not be a typical representative of the species, and I resolved to wait till more larvæ could be found, either to prove or disprove the correctness of my supposition before offering any description for publication. But I can now say, after having had examples of the larvæ from Norfolk, Devonshire, and Hampshire, which differed in no way from the one above mentioned, that I have no doubt of this, which I am about to describe, being the typical form of the larva, at least in this country.

Unfortunately, I can say but little of the egg-state, and nothing of the juvenile larva; for though some years ago I imprisoned a female moth in a pot with growing *Aira flexuosa* covered with lino, the eggs she deposited were allowed to hatch, and the young larvæ to escape during my absence from home: I had, however, previously noted that the eggs were of a pale drab colour, and were all adhering to the blades or leaves of the fine grass about four or five inches from the soil.

Besides *Triticum repens* and other grasses, this larva seems partial to a variety of *Phalaris*, the striped ribband grass of gardens. On the approach of cold weather it seeks a hybernaculum often in the loose grassy sods at the foot of a tree, particularly affecting decayed willows, and occasionally under the bark, and sometimes within the tree itself, amongst the rotten dust. At the end of February or beginning of March it wakes up, but not to feed again, and after crawling about for a few nights, finds a suitable place for pupation. Some of the larvæ I had in captivity

spun amongst the roots of grass, and others in loose, light soil, and the perfect insects came forth from the 27th to the 30th of May, 1871. Before proceeding with my description, I desire to offer my thanks to the Rev. Henry Williams and to Mr. H. D'Orville, for their valuable assistance in supplying larvæ both in spring and autumn.

In October, the full-grown larva measures from $1\frac{1}{2}$ to $1\frac{3}{4}$ inch in length when stretched out, but often contracts itself to 1 inch; it is cylindrical, of about uniform moderate stoutness, tapering very slightly just at each end, the head being a trifle the smallest of the segments, and the anal segment rounded at the tip; the smooth head and plate on the second segment are highly lustrous, and the skin on all the rest of the body is glossy, but, from being covered with multitudes of minute wrinkles, it has no very great play of light on its surface; there are also three deeper sub-dividing transverse wrinkles across each segment. The whole colouring consists in lighter and darker tints of a reddish-brown inclining to ochreous; the ground colour of the back and side is not very deep in tint, and is much like that of some of the *Leucanidæ*; the dorsal stripe begins on the deeper brown plate of the second segment, where it is but a mere line, on the third and fourth it grows wider, and from thence is of about equal width to near the anal tip, being very much paler than the ground, indeed, almost whitish-ochreous, it is very finely edged with darker brown, and on each segment passes through a narrow elliptically-shaped mark of darker brown than the ground colour, composed of freckles; the sub-dorsal stripe is of similar width, but is very little paler than the ground colour, though very well defined by its having darker edges; below again, after an interval of the ground colour, which terminates in a dark edging, comes the spiracular stripe broader than either of the others, of about the same depth of tint as the sub-dorsal stripe, and defined by a paler edging above and below; about the middle of this broad stripe, runs the row of brown spiracles, each delicately outlined with almost black, and surrounded with a small pale halo; the belly and legs are of a slightly deeper tint than the spiracular stripe, and are faintly freckled with a still paler tint; the ventral legs are all tipped with deep brown, the anterior legs spotted with brown; the usual two pairs of tubercular dots on the back of each segment are deep brown, as are also the pair on the side situated above and behind each spiracle, each dot being furnished with a fine brown hair; the head is brown, and very dark brown round the mouth. In March, after hybernation, the larva is generally of darker hue, the whole colouring being of deeper brown, with scarcely any trace of ochreous in its composition, but this is the only change, as all its details remain relatively the same.

The cocoon is made of pale grey glassy-looking silk, compact and smooth of texture, firmly adherent to the substances around it, broadly oval in form, and little more than half-an-inch in length; the pupa is half-an-inch long, of moderate stoutness, smooth, dark reddish-brown in colour, and very highly polished.—W. BUCKLER, Emsworth, November, 1871.

Description of the larva of Tephrosia crepuscularia.—On the 2nd of June last, I received from my friend, Mr. J. P. Barrett, of Peckham, several larvæ of this species, which, being full-grown, I described as follows. Moderately stout, length about an inch-and-a-quarter. Head flattened and notched on the crown, the same

width as the second, but very much narrower than the third segment, which is swollen laterally, forming a prominent hump on each side; the remaining segments are uniform, and of about equal width until the 12th is reached, where there is a slight lateral dorsal ridge. Skin rather wrinkled, puckered along the sides. The third pair of legs appear longer than the others, caused by the 4th segment being swollen ventrally.

Ground colour stone-grey; in some specimens very distinctly variegated with reddish-ochreous, whilst in others a dull dirty black prevails. In the grey variety, which I will call var. 1, the head is stone-grey, marbled with different shades of brown; the medio-dorsal stripe is dull dirty green, interrupted on several of the segments; to the 5th segment the sub-dorsal lines are dark sienna brown, with a fine rust-coloured centre; at this segment they are interrupted, but continued without the rust-coloured centre, at the middle of the 6th, until the 11th, when they turn downwards towards the front prolegs, forming an angle enclosing a pale yellow mark; they are seen again as a short, oblique, dark sienna brown streak on each side the ridge on the 12th segment; on the 6th segment the sub-dorsal lines also pass obliquely upward, meeting in the centre, and forming a conspicuous V-shaped mark, the apex being pointed anteriorly; there are no perceptible spiracular lines, that region being variegated with smoke colour. The general colour of the belly is dull-yellow, thickly clouded with smoke colour, the space between the two pairs of prolegs being grey. The spiracles are small, brown with pale centres. Var. 2, the form variegated with reddish-ochreous, has the head reddish-brown, marbled with darker brown, and a black V-shaped mark, the apex of which is pointed towards, and close to, the notch in the crown; the medio-dorsal line the same as in var. 1, as are also the sub-dorsal lines, but the pale mark on each side of the 11th segment, above, and slightly in advance of the anterior pair of prolegs is lemon-yellow, much brighter than in var. 1. The ventral surface as in var. 1, but having the characteristic reddish-ochreous variegations. Var. 3, the smoke-coloured variety, is the darkest form I have seen. The head is grey, marbled with smoke-colour, and this smoke-colour also prevails on the dorsal surface of the body. Singularly, the pale mark above the anterior part of prolegs is paler than in either of the other varieties, being nearly white.

The larvæ seem partial to oak, and when at rest, grasp the stem with the claspers, stretching out at full length, with the anterior part raised. The two anterior pairs of legs are tucked in, whilst the ventral humps render the third pair very prominent. All the legs are slightly bent inwards.

At the time these larvæ were changing to pupæ, I was taking the perfect insect of the closely allied *biunilularia* at large.—Geo. T. PORRIT, Huddersfield, January 8th, 1872.

Tinea pallescentella bred from a dead cat at South Shields.—On the 15th July last, I observed a dead and desiccated cat lying beneath some old gas-pipes, and, on examining it closely, found it to contain both larvæ and pupæ which have produced *Tinea pallescentella* and *T. rusticella*, the latter the more abundantly. The former, though not so common, has appeared in greater or less numbers every month since July, and it is still coming out, for I took five specimens on the 14th of the present month, and two on the 15th, and I doubt not but that it will appear

so long as the weather remains open. There seems to be a constant succession of broods—larvæ, pupæ, and imago occurring at the same time. At present, the larvæ are devouring the internal parts of the animal.—C. EALES, Grace Street, South Shields, 19th December, 1871.

Note on Incurvaria canariella (E. A. 1872, p. 122).—Mr. Hodgkinson is of opinion that this is the same insect as that which he sent me in 1859, and which I then pronounced to be *Incurvaria tenuicornis*. Now, *I. tenuicornis* is an insect which I never possessed, the description in the 'Insecta Britannica' being made from two specimens in the collections of Mr. Edwin Shepherd and Mr. Henry Tompkins; but I think in 1859 I could hardly have named as *I. tenuicornis* so blunt-winged an insect as *I. canariella*, as the very bluntness of the wings struck me directly the Rev. R. P. Murray sent me his Manx specimens last summer. Possibly, Mr. Hodgkinson may have had the real *I. tenuicornis* in 1859, and afterwards meeting with *I. canariella* assumed it to be the same species, as already suggested by me in the Ent. Annual. It "was at first supposed by its captor to be *tenuicornis*, Sta., and may perhaps have been previously overlooked by collectors under the idea that it was that species."—H. T. STANTON, Mountsfield, Lewisham, S.E., January 8th, 1872.

Captures of Lepidoptera in Morayshire.—The last season for collecting has been the very worst I have experienced since my residence in Morayshire. Owing, moreover, to an unfortunate accident in the month of May, I have been prevented from doing much at sugaring.

Still the record of a few species may be of interest for comparison with what has been done elsewhere.

During the whole season, instead of hundreds of moths on the trees, the result has been not one tenth part of the usual number.

Agrotis præcox.—On the 22nd May I dug up 120 larvæ, nearly full fed, on the Culbin sands. A month later I visited the locality again, going to certain marked places (small hillocks covered with the food plant, *Salix repens*) which had swarmed with larvæ before; and, although I dug down to two feet in the sand, failed in finding a single pupa. I bred a fine series of this moth from larvæ obtained in May. The larvæ eat any kind of willow.

Agrotis agathina.—The larvæ swarm on the Califer Hill towards the end of May, and in August the moths were flying very abundantly about among the heather.

A. valligera.—Took a full-grown larva amongst those of *præcox* on the 22nd May. The moth afterwards only occurred sparingly at sugar.

G. libatrix.—26th May, took one specimen at sugar: new to the locality.

C. umbratica.—Very abundant in June, resting on palings.

P. v-aureum.—14th June, on *Lychnis vespertina*. June 28th, *A. corticea*, at rest. Very rare this season. *A. pyrophila*, at rest in the house. I took a full series of this moth afterwards, all, however within doors. I generally visited the various rooms and out-buildings just after dark and took the moths fluttering on the inside of the glass windows. This propensity to fly into buildings I have noticed during previous years, but not to the same extent as this year. I never took the moth out of doors but once, and that was beaten out of the "bents" on

the Culbin sands. These particulars are given in order that others may be on the look out for the insect next year, where it occurs. Little is known of the economy of this local species. In vain I tried to get eggs.

July 8th.—*A. urticæ* at flowers of *Silene inflata*.—July 12th, *N. conflua*, at rest: common afterwards at sugar.—14th, *T. batis*, sugar. 18th, *C. flavicornis*, larvæ abundant on birch.—27th, *A. tritici*, bred from pupæ dug up in the garden. I obtained many fine forms of this pretty insect, which varies more than usual in this locality.

August 8th, *C. graminis*, very abundant at ragwort, and larger than usual, this year.—8th. My friend, N. F. Dobrée, took *P. bractea* over flowers of *Centaurea nigra*. More specimens were afterwards obtained in this same place. The larvæ probably feed on *Ononis arvensis*, which grows in profusion close by.—9th. The first *N. depuncta* at sugar. At rest, too common afterwards.—14th. Took *A. cursoria*, Culbin Sands.—17th. Took at rest the first specimen of the dark variety of *T. orbona*, also the first *Stilbia anomala*. At sugar, *N. Dahlii* and *neglecta* and *E. nigra*; all common afterwards at sugar.—25th. *E. luteolenta*, at sugar.

September 9th. *C. vetusta* and *exoleta* at sugar: afterwards swarming at the like bait.

October 12th. Pupæ of *T. piniperda* in the pine woods. The white stigma plainly visible through the shell.—GEO. NORMAN, Cluny Hill, Forres, N. B., December 15th, 1871.

Captures of *Lepidoptera* near Battle, Sussex.—February 27th, *C. flavicornis* bred from pupa.—26th, *H. leucophaea* on trunks.

March 2nd, *C. flavicornis* flying round birches.—12th, *B. parthenias* commonly.—17th, *B. notha* one.—19th, *A. prodromaria* one, at light.

April 7th, *V. polychloros*, hibernated.

May 20th, *P. lacertula*, *P. falcula*, one of each at dusk.

June 1st, *M. hastata*, one by beating.—4th, *E. advenaria*, *B. consortaria*, *S. extersaria*, one of each.—10th, *A. subsericeata*, *P. falcula*, *C. fluctuosa* (2), *S. extersaria*, *N. camelina*, at dusk. *H. prasinana*, one at sugar.—11th, *Z. trifolii* commonly. *Thecla quercus*, a larva found.—16th, *B. lancealis*, *A. sylvata*, *C. fluctuosa* (4), at dusk.—17th, *B. lancealis*, *A. sylvata*, *Eup. nanata*, at dusk.—30th, *S. undulata*.

July 1st, *G. papilionaria*, *M. notata*, *M. albicillata*, singly at dusk. *A. tincta*, *A. herbida*, one each at sugar.—8th, *C. miniata*, *F. fuscata*, *P. bajularia*, *E. heparata*, one each at dusk. *D. Orion*, *C. or*, one each at sugar.—15th, *M. unangulata*, *S. undulata*, *H. derivalis*, at dusk. *C. or*, one at sugar.—17th, *V. polychloros*, 2 bred.—22nd, *T. fimbria*, *A. advena*, at sugar.—29th, *G. papilionaria* at dusk. *A. ligustri* at sugar.

August 6th, *V. polychloros* flying.—28th, *C. nupta*, commoner than usual, this year.—30th, *C. Edusa* seen.

November 11th, *X. rhizolitha* at sugar. *G. rhamnii* on a bush.—J. H. A. JENNER, Lewes, January 13th, 1872.

Additions to the list of *Manx Lepidoptera*.—Among the insects which I have taken this year in the Isle of Man, are single specimens of *Dasypolia templi* (♂) and *Agrotis pyrophila*. These are good additions to our local list. The only other *Noctua* added by me to it during the same period is *Cerigo cytheræa*.—R. P. MURRAY, Mount Murray, Isle of Man, 30th December, 1871.

Review.

A CATALOGUE OF BRITISH HYMENOPTERA ACULEATA, compiled by FREDERICK SMITH, Assistant in the Zoological Department of the British Museum. Published by the Entomological Society of London.

"*Irritabis crabrones.*"—Plant., Amph. 542.

In 1829, James Francis Stephens produced his "Systematic Catalogue," and was able, within the limits of a moderately-sized volume, to present a conspectus of all the insects then known to inhabit Britain. The progress of Entomology, however, during the last 40 years has been such, and the number of species described has multiplied so rapidly, that no Entomologist of the present day would venture to compile a General Catalogue of our native insects; and, in truth, those who study British insects as a whole, or do more than devote themselves to a single Order, or even a small fragment of an Order, may well be counted on the fingers. When, therefore, some four years ago, the preparation of a List of British Insects was undertaken by the Entomological Society, it was felt that the combined labour of numerous persons was necessary to accomplish such a work, whilst financial considerations rendered it compulsory that the publication should be spread over a considerable time. It was therefore resolved that the different Orders should be issued separately, but as nearly as might be on a uniform plan, so as ultimately to form a homogeneous whole.

The first instalment, containing the Order Neuroptera in the Linnean sense, in which 323 species are enumerated, appeared in May, 1870. The second instalment, issued in November last, contains the Aculeate Hymenoptera, and of these 378 species are indicated as indigenous. For years past, Mr. Fredk. Smith has been known as our chief worker among ants and bees; and the mention of his name as the compiler will be sufficient, without any formal eulogium, to satisfy all that the preparation of this List could not have been entrusted to more competent hands.

It is easy to raise a laugh at the expense of the man who spends time and labour in poring over old and vague descriptions to unravel complications of synonymy, and in the end produces what, to the uninitiated, appears a chaos of confusion, as unintelligible as a cuneiform inscription. But, so far from deriding the compiler as a drudge whose work can be performed by any patient animal, I maintain that, to compile a Catalogue as it ought to be compiled, the very best man is required—and (as Job's comforter, I may add) the better he does it, the sooner will his work become obsolete. For, though these Catalogues have an enduring value, as permanent records of the state of knowledge at the particular time, their chief importance consists in the impetus which they undoubtedly give to the study of the particular group; and the greater the impetus, the more rapid is their supersession.*

Mr. Smith sub-divides the Aculeata into four groups; *Heterogyna*, containing 4 families, 12 genera, and 35 species; *Fossorae* (? *Fossoria*), containing 8 families,

* Mr. Smith has already rendered this Catalogue incomplete, by describing two new species of bees, *Trachusa repens* Ent. Ann. 1872, p. 193, and *Andrena picturata* lib. cit. p. 166. The latter, however, is only doubtfully distinct from *A. pitipes*, with which it was taken in company; surely it would have been better to await the capture of at least a second specimen, before naming it "provisionally."—J. W. D.

34 genera, and 119 species; *Diptera*, containing 2 families, 3 genera, and 20 species; and *Anthophila*, containing 2 families, 26 genera, and 204 species. Roughly and popularly speaking, these sub-divisions may be taken to represent Ants, Sand-wasps, Wasps, and Bees.

A review of a work on Aculeata will naturally be expected to contain some stinging criticisms; but in this respect my readers will scarcely be gratified. I would not willingly tread in a hornet's nest. And, in truth, as regards the Entomology of the group, Mr. Smith's habit of keen observation and familiarity with the insects themselves, his knowledge of the literature of the subject, his power of detecting affinities, and his faculty for the discrimination of species, place him far above my criticism. My remarks will therefore be addressed principally to points of detail in the arrangement of the Catalogue; in other words, it is the Cataloguer, not the Entomologist, that I arraign; and the points to which I shall refer will be chiefly such as have a bearing upon the future parts of the undertaking.

I will first notice a few variations in form between the mode of dealing with the Aculeate Hymenoptera, and that pursued with the Neuroptera. In the Neuroptera, Mr. McLachlan, in his citations of authors, always begins with the oldest name of the species, then follows on with the references in chronological order to authors who employ the same generic and specific names, and next with the references in chronological order to authors who employ the same specific but a different generic name; the other specific names which have at various times been given to the insect are then taken up in turn, and each is treated in like manner. Take, *e.g.*, *Sympetrum scoticum*, Cat. Neur. p. 12. The original name given by Donovan was *Libellula scotica*; commencing with this, we have next the references to Selys, Rambur, and Hagen, who all use the same name; then the references to Newman and Evans, who employ the names *Sympetrum scoticum* and *Diplax scotica* respectively. Having thus exhausted all the references under *scotica*, the next oldest name, *Sympetrum basale*, is taken, and this specific name is exhausted in the same manner as the previous one; and so on with the rest.

In the Aculeata, Mr. Smith has proceeded upon a different plan; take, for instance, *Sapyga clavicornis*, p. 5. Beginning with *Apis clavicornis*, we pass at once to the synonyms *Scolia prisma* and *Masaris crabroniformis*, and then return to *Sapyga prisma*, and ultimately to *Sapyga clavicornis*, the binomial appellation by which the insect is now known. Or, take *Ammophila viatica*, p. 9. Beginning with *Sphex viatica*, we go in turn to *S. hirsuta* and *arenaria*, then return to *Ammophila hirsuta*, again return to *Psammophila viatica*, and after this devious course are finally landed in *Ammophila viatica*. It is manifest that the order of citation is here determined by different considerations from those which governed the order in the Catalogue of Neuroptera; Mr. Smith's scheme seems to depend upon generic chronology, while Mr. McLachlan's is based on specific chronology; and as this plan has been followed pretty uniformly (though not universally) throughout the present Catalogue, I presume it has been deliberately adopted as an improvement upon the former plan. The difference between the two (note also the variation in punctuation) will be best seen by placing in juxtaposition the entry of the same species as catalogued by Mr. Smith, and as it would have appeared if the citations had been given according to the scheme of the previous Catalogue (No. 1). Thus,

SAPYGA CLAVICORNIS (Mr. Smith).

Apis clavicornis, Lin. S.N. i. 953.
Scolia prisma, Fab. E. S. ii. 236.
Masaris crabroniformis, Panz. F.G. 47,
 22, ♀. *Sapyga prisma*, Klag, Mon.
 Siric. 63; Lind. Obs. 303; Wesm. Hym.
 Foss. Belg. 25; St. Farg. Hym. iii. 566.
S. clavicornis, Cur. B. E. xi. pl. 532;
 Shuck. Foss. Hym.; Smith, Brit. Foss.
 Hym. 52; Thoms. Opusc. Ent. 210.

SAPYGA CLAVICORNIS (No. 1).

Apis clavicornis, Lin. S.N. i. 953;
Sapyga clavicornis, Cur. B.E. xi. pl. 532;
 Shuck. Foss. Hym. 45; Smith, Brit.
 Foss. Hym. 51; Thoms. Opusc. Ent.
 210. *Scolia prisma*, Fab. E. S. ii. 236;
Sapyga prisma, Klag, Mon. Siric. 63;
 Lind. Obs. 303; St. Farg. Hym. iii. 566;
 Wesm. Hym. Foss. Belg. 25. *Masaris*
crabroniformis, Panz. F. G. 47, 22, ♀.

My next observation is that Mr. Smith does not always follow the order of time in his citations, even where (so far as I can see) no reason exists for deviating from chronological arrangement. For instance, under *Tetramorium cœspitum* (p. 3), why should Nylander's synonym *Myrmica fuscula* (1846) and Förster's *M. impura* and *modesta* (1850) be cited before Latreille's *M. cœspitum* (1805)? And under *Spilomena troglodytes* (p. 17), why (in deviation from the plan even of generic chronology) should *Stigmus troglodytes*, Lind. (1829), be placed after *Celia troglodytes*, Shuck. (1837)? Under *Nomada germanica* (p. 33), why do *N. ferruginata*, Schæf., Nyland., and Thoms., precede *Apis ferruginata*, Kirby? and under *N. lineola* (p. 34), why is *N. cornigera*, St. Farg. (1839), given precedence over *Apis cornigera*, Kirby (1802)? But still more unaccountable are cases like *Gorytes Fargei* (p. 11), where Shuckard's name (1837) is cited after the later references to the *G. campestris* of St. Fargeau, Dahlbom, Wesmael and Thomson; or like *Melecta armata* and *Stelis aterrima* (p. 35), where Kirby's (1802) rejected names of *punctata* and *punctatissima* (which, by the way, should be *punctulatissima*) are cited at the head of the list, before Panzer's earlier names of *armata* and *atterrima* (1799), which are by virtue of their priority retained for the species respectively.

Again, though this is less important, in citing authors who employ the same generic and specific names, the order of date is not always preserved. Thus, under *Sapyga clavicornis* (*vid. sup.*), in referring to *S. prisma*, St. Fargeau ought to precede Wesmael; under *Apathus campestris* and *Bombus sylvarum* (p. 40), Shuck. Brit. Bees (1866) should precede Thoms. Opusc. Ent. (1869); and throughout the Anthophila, Smith, Bees Gt. Brit. (1855) is very frequently, though not invariably, cited before Nyland. Ap. Bor. (1848). See also *Halictus tumulorum* (p. 21), where references to Smith and Thomson (1869) are placed before Smith (1855), Nylander (1852), and Shuckard (1866).

Not unfrequently, a later name is preferred to an earlier one, without any indication of reason for the rejection of the earlier. For instance, *Nomada armata* (p. 33); Stephens's name *Kirbyi* (1835) is rejected, whilst Schæffer's *armata* (1839) is adopted. So in *Cœlixys simplex* (p. 35); Kirby's name *conica* is passed over, and the reason is shewn by the words (*ucc* Lin.); then follow, as synonyms, *inermis*, Kirby (1802), and *elongata*, (St. Farg. 1841, though Mr. Smith cites only Gerst. 1869), whilst the name adopted is *simplex*, Nylander (1852).

Other instances in which an older name is rejected for a later one, without any reason being indicated, occur in *Priocnemis sepicola*, p. 7, *Gorytes laticinctus*, p. 12, and *Prosopis communis*, p. 23. The first is the *fuscus* of Fabricius, but not of

Linné; the second is the *quadrifasciatus* of Spinola, but not of Fabricius; the third is the *annulata* of Kirby (and indeed of Fabricius, though he is not cited), but not of Linné. In such cases the addition of (*nec* Lin.) or (*nec* Fab.) would have supplied the requisite explanation.

But *Gorytes laticinctus* is the *G. arenarius* of Van der Linden. And although St. Fargeau's name *laticinctus* had an earlier origin than that shown by Mr. Smith (in the first volume of *Ann. Soc. Ent. Fr.*, 1832), yet the name *arenarius* dates from 1829. Probably *arenarius* had, like *quadrifasciatus*, been anticipated, and all that is required is another (*nec* Lin.) or (*nec* Fab.); though the existence of *Sphex arenaria*, Lin., which before Van der Linden's day had been allocated to the genus *Cerceris*, is not a sufficient ground for rejecting a *Gorytes arenarius*. Or it may be that Mr. Smith declines to depose the name *laticinctus*, which is in use, for *arenarius*, which has never attained currency. But even the principle of "communis error" does not explain the adoption of the name *Crabro luteipalpis*, p. 13; as in the last case, St. Fargeau's *luteipalpis* is posterior to Van der Linden's *elongatulus*, and the latter, besides its priority, has the balance of usage in its favour, and is employed by Shuckard, Dahlbom, Wesmael, and Thomson.

There is another class of cases in which Mr. Smith has apparently, though not in reality, set the law of priority at defiance. Take *e. g.* *Priocnemis exaltatus*, p. 7. The earliest authority cited for the specific name is Fab. E. S. ii. 251, which is posterior to Schrank's name *albomaculata* (1781); but, in truth, the species was first described as *Sphex exaltatus* by Fabricius, in S. E. 351 (1775). So also with *Crabro varius*, *bimaculatus*, and *pallidipalpis* (p. 14); if the references given to St. Fargeau were the earliest, those names would be posterior to the *G. spinipectus*, *geniculatus*, and *propinquus* of Shuckard; but St. Fargeau's original descriptions in the *Ann. Soc. Fr.* date from 1834, and thus preceded Shuckard (1837).

This brings me to the remark that in every case the oldest authority for a name ought to have been given—followed, of course, by references to the later works of the same author or of other authors, when necessary. I am not one of those who admit any quasi-proprietary right of the nomenclator in the species he describes. The name of an insect is a thing absolute, quite independent of the name-giver, and I care not a straw whether it was given by Linné or Fabricius, by Latreille or Kirby. The name of the hive-bee is *Apis mellifica*, not "*Apis mellifica*, Lin.," and (except when required for some definite purpose, as *e. g.* to remove an ambiguity, and distinguish between the thing which Linné calls *Apis muscorum* and the other thing which Kirby called by the same name) I hold the practice of tacking on the nomenclator's name as a modern custom more honoured in the breach than the observance. I have no respect for a nomenclator, simply as such; the fact that he has been the first to name and describe an insect or a plant gives him, in my eyes, no title to immortality, does not even invest him with the faintest halo of sanctity. I use the name he has given, not as a recognition of any merit in him, or as an admission of any right in him, but solely from considerations extraneous to him. The rule of priority in nomenclature, I hold to be a good rule, within its proper limits; it is not an unmixed good: and priority, like any other hobby-horse, may be ridden too hard. When the rule is strained beyond the reason for the rule, it becomes a nuisance—nay more, it produces intolerable evil; but when reasonably applied, it produces more convenience than inconvenience. I accept it,

therefore, as a rule of convenience, and nothing more; a rule adopted for the benefit of science, not for the glorification of name-givers. And the sooner the better, that we are well rid of any such notion as that the law of priority is established in *piam memoriam fundatoris*, or that there is any "divine right" of the nomenclator.

But, quite irrespective of any question of priority between different authors, I think that the first description of each species should have been cited throughout this Catalogue. Thus, under *Ceropales variegata* (p. 8), the first reference should have been *Evania variegata*, Fab. E. S. Supp. 241, not *C. variegata*, Latr.; under *Cemonus unicolor* (p. 18), the first reference should have been *Pemphredon unicolor*, Latr. Gen. Crust. et Ins. iv. 84, not Lind. Obs. 83; and under *Mimesa equestris* (p. 19), the first reference should have been *Tryporylon equestre*, Fab. Piez. 182, and not *Psen equestris*, Lind. Obs. 107. By the way, is not this species the *Psen rufa* of Panzer? so that, but for Fabricius, it would be now called *Mimesa rufa*, and not *equestris*. So also, under *Vespa arborea* (p. 22), the first reference should have been *Vespa borealis*, Smith, Zool. 1843, p. 170 (*nec* Kirby). And are not *Halictus rubicundus* (p. 24) and *Andrena nitida* (p. 27) the *Apis rubicunda* of Christ and the *Apis nitida* of Fourcroy, each of whom was anterior to Kirby? and is not *Bombus senilis* (p. 40) the *Apis senilis* of Fabricius? whom may Smith long survive!

Mr. Smith occasionally cites the names of the Fauna Suecica, ed. 2, so that he is not one of those who think that scientific nomenclature ought to begin with the 12th ed. of the *Systema Naturæ*, though most of his citations of Linné are from the last mentioned work, even when the same species is described in the Faun. Suec. So again, the bulk of his references to Fabricius are to the *Entomologia Systematica* or the *Systema Piezatorum*, though many of the species are given in the *Systema Entomologiæ* (1775); indeed, the last mentioned work is so seldom cited that, like the *opus posthumum* of John Ray, it has escaped notice in the introductory List of Abbreviations. We have already seen that many of St. Fargeau's descriptions date from a period anterior to that shewn in the Catalogue. And, lastly, there are species described by Mr. Smith himself, most of which happily have no synonyms, or, at all events, are not yet known to have any, and for which he has been content to refer only to Bees Gt. Brit. (1855); yet many of these were described years before, as e. g., *Prosopis cornuta* and *punctulatissima* (p. 23), under the names of *Hylæus cornutus* and *punctulatissimus*, Tr. Ent. Soc. iv. 32, 33 (1845), *Halictus maculatus*, *gramineus*, *zonulus*, *longulus*, and *prasinus*, *Andrena decorata*, *ferox* (misprinted *Apis ferox*, p. 27), *vitrea* (the ♂ for the first time described in Ent. Ann. 1872, p. 105), *similis*, *fucata*, *constricta*, *frontalis*, *aprilina*, *extricata*, *polita*, *fulvescens*, *longipes*, and *argentata*, *Nomada baccata* and *rubra*, *Stelis 8-maculata* (now figured, Ent. Ann. 1872, f. 3), *Coelioxys umbrina*, *Megachile versicolor* and *odontura*, and *Osmia pilicornis*, all of which were originally characterized in The Zoologist, between 1844 and 1849.

Whilst dealing with dates, I may remark that a fatality appears to have attended the few references in the Society's Catalogue to the Society's Transactions. The date of "Smith, Brit. Form." is stated (p. vii) to be 1854 instead of 1855, and in the only citation from this paper, *Tapinoma erraticum* (p. 2), the page is wrongly given. The date of the generic name *Spilomena* (p. 17) is given 1840 instead of 1837, and the reference to Tr. Ent. Soc. ii. 79 for the species *S. troglodytes* is inserted altogether by mistake.

I have now come to the end of my remarks which turn on questions of chronology or priority; and I proceed to enter a protest against a mode of citation which Mr. Smith has in some cases adopted. When papers are published in the Transactions of a Society, or a periodical, the reference should be given to the volume of the Transactions, or to the periodical by its title, not simply to the title of the paper. In the case of some papers of Nylander's, published by the Academy of Sciences of Helsingfors, a paper of Schenck's, published by the Natural History Society of Nassau, the above-mentioned paper of Smith's published by the Entomological Society of London (only once cited in the Catalogue), and a paper (of only 8 pages, twice cited) of Wesmæel's published by the Academy of Sciences of Brussels, Mr. Smith has referred to the title of the papers themselves, thus "Nyland. Mon. Form.," "Nyland. Ap. Bor.," and not to the works in which they appeared. These papers were never separately published as independent works, and I see no reason why they should have been cited in a different way from the numerous other papers—published (say) in the Trans. Lin. Soc. Lond., the Ann. Soc. Ent. Fr., or the Stett. Ent. Zeit.—to which Mr. Smith makes reference. Schenck's Nass. Bien. was originally published in the Jahrb. Ver. Nass. in 1859, and was also published as a separate work in 1861; but even in this case it would have been better to cite the earlier print rather than the later reprint. I may add that two supplements to "Nass. Bien." have appeared in the Jahrbücher for 1863 and 1869, but to neither of these, nor to the papers on Bees by the same author in Stett. Zeit. 1870, does Mr. Smith refer, though the conclusions arrived at by Schenck are in some respects at variance with those of the Cataloguer.

No author is cited by Mr. Smith so frequently as Nylander: to "Ap. Bor." "Ap. Bor. Supp." and "Ap. Bor. Revis." alone there are more than 120 references; and when we turn to the list of Abbreviations (p. vi.) to learn where and when these works appeared, we are informed that they, as well as the "Mon. Form." and "Mon. Form. Addit.," are published in the Acta Soc. Sci. Fennicæ. It is true the "Mon. Form." and its supplements (for there are two) are published in the Acta; the "Ap. Bor." and its two supplements however are not in the Acta at all, but in a "Bihang till Acta" entitled "Notiser ur Sällskapetets pro Fauna et Flora Fennica Förhandlingar." As these Helsingfors publications are little known in this country, it may be serviceable to add the following particulars concerning them. The publication of the Acta commenced in 1810; and the two first volumes (1840-47) contain half-a-dozen Entomological papers by Sahiberg and Mannerheim; in the 3rd fasciculus (1846) of the 2nd volume will be found Nylander's Adnotationes in Monographiam Formicarum borealium Europæ (which was read before the Society on the 9th February, 1846), and also the Additamentum Adnotationum &c. (which was read on the 9th November, 1846). In the 3rd vol. of the Acta (1852, on the title page) will be found an Additamentum alterum Adnotationum &c. (said to have been read on the 1st November, 1846, but this must be a misprint, probably for 1849). About 1847 it seems to have been thought that it was desirable to separate the zoological and botanical papers from the rest, and accordingly the "Notiser" were started for their reception. As however Nylander's Mon. Form. and the Addit. had appeared in the Acta, on this account (I presume) the Addit. alterum was inserted in the Acta; but, with this exception, there is no zoology in the Acta of later date than 1846. The Notiser were at first published

in 4to, uniform with the Acta, and vols. 1, 2, 3, of the Notiser may in some sense be regarded as appendices to vols. 2, 3, 4, of the Acta. But on the completion of vol. 3 of the Notiser, the 4to. was abandoned, an 8vo. series was begun, and vol. 11 (or vol. 8 of the new series), dated 1871, is now before me.* I hope that a complete set of the Notiser will shortly be in the Entomological Society's library, and thereby render accessible to our members the papers, not only of Nylander, but of Tengström, Sahlberg, and Reuter.

To revert more particularly to Nylander's papers on Aculeate Hymenoptera. Vol. i. of the Notiser contains "Mutillidæ, Scoliidæ et Sapygidæ boreales," read 12th April, 1847; "Strödda Anteckningar" (including some notes on Ants), read 17th May, 1847; and the "Adnot. in expos. monogr. Apum borealium," read 6th December, 1847. Vol. ii. of the Notiser contains "Supplementum Adnot. in exp. mon. Apum bor.," read 18th November, 1850, and the "Revisio Synoptica Apum borealium," read 8th December, 1851. As there are some errors in Hagen's Bibliotheca Entomologica respecting these papers, it may be worth while to add the following:

NYLANDER (William); of Helsingfors, in Finland.

1. Adnotationes in Monographiam Formicarum borealium Europæ.
Acta Soc. Sci. Fennicæ, ii. 875—944. (Helsingfors, 1846).
2. Additamentum ad Adn. in. Mon. Form. bor. Europæ.
Acta Soc. Sci. Fenn. ii. 1041—1062. (1846).
3. Additamentum alterum ad Adn. in Mon. Form. bor. Europæ.
Acta Soc. Sci. Fenn. iii. 25—48. (1849).
4. Mutillidæ, Scoliidæ, et Sapygidæ boreales.
Notiser ur Sällskapetets pro Fauna et Flora Fennica Förhandlingar, i.
7—30. (1848).
5. Strödda Anteckningar.
Notiser &c., i. 289—304. (1848).
6. Adnotationes in expositionem monographicam Apum borealium.
Notiser &c., i. 165—282. (1848).
7. Supplementum Adnotationum in exp. monog. Apum borealium.
Notiser &c., ii. 93—107. (1852).
8. Revisio Synoptica Apum borealium, comparatis speciebus Europæ mediæ.
Notiser &c., ii. 225—286. (1852).

With the exception of No. 5, Mr. Smith refers to all these papers, though apparently without knowing that he was citing two of them. For, the references to *Formica glabrella* (p. 2), *Myrmica lippula* (p. 3), *M. unifasciata* and *flavidula*, and *Myrmecina striatula* (p. 4), should all be to "Mon. Form. Addit. alterum" that is to "Acta Fenn. vol. iii," the pages being correctly given, except *Myrmica flavidula*, which is iii. 43 (not 33). And the references for *Tiphia femorata* (p. 5) should be "Mutill. Scol. &c., bor.," that is "Notiser Fenn. i. 21," and for *T. minuta*, "Notiser Fenn. i. 24."

It was the last two references to Nylander which led me to test Mr. Smith's

* In the Zool. Record for 1870, Mr. W. F. Kirby has referred to the 10th vol. (i.e. the 7th of the new series, which properly belonged to the Record for 1869) under the abbreviation "Fauna et Flora Fenn. Förh.," but at p. 409, *Caradrina cinerascens*, the vol. is erroneously given as xi. instead of x; and at p. 420, *Tortrix lapponana*, the page is given 310 instead of 359.—J. W. D.

quotations by an examination of the original volumes. It struck me as curious that the *Scoliidae* should be included in a monograph of *Apidæ*, and as still more curious, when, on referring to the Museum "Catalogue of British Fossorial Hymenoptera, Formicidæ and Vespidae," I found that, throughout the *Mutillidæ*, *Scoliidae* (or *Scoliadæ* as they are there called), and *Sapygidæ*, the citations of Nylander are uniformly "Ap. Boreal." When I find in the British Museum Catalogue "*Tiphia femorata*, Nyland. Ap. Boreal. 19, 1", and in the Entomological Society's Catalogue "*Tiphia femorata*, Nyl. Ap. Bor. 19", whilst the true reference is "*Tiphia femorata*, Nyl. Scol. Bor. 21"; and when I find "*Osmia xanthomelana*, Nyland. Ap. Boreal. Suppl. p. 270, 5" re-appear as "Nyland. Ap. Bor. Suppl. 270," whilst the true reference is "Nyland. Ap. Bor. Revis. 270", I am afraid the conclusion is irresistible that the citations of 1871 have been copied from those of 1858 and 1855 without verification by inspection of the original papers. I subjoin the references to Nylander's paper for our eight British species belonging to the three families *Mutillidæ*, *Scoliidae* and *Sapygidæ*.

- MUTILLIDÆ. *Mutilla europæa*, Nyl. Not. Fenn. i. 8.
 „ *ephippium*, Nyl. Not. Fenn. i. 13.
Myrmosa melanocephala, Nyl. Not. Fenn. i. 16.
Methoca ichneumonides, Nyl. Not. Fenn. i. 19.
 SCOLIIDÆ. *Tiphia femorata*, Nyl. Not. Fenn. i. 21.
 „ *minuta*, Nyl. Not. Fenn. i. 24.
 SAPYGIDÆ. *Sapyga punctata*, Nyl. Not. Fenn. i. 25.
 „ *clavicornis*, Nyl. Not. Fenn. i. 27.

To pass on to the Bees, it is perhaps scarcely surprising that confusion should arise between "Ap. Bor.", "Ap. Bor. Suppl.", and "Ap. Bor. Revis." The following may be adduced as examples, and a dozen others might be added :

- p. 24. *Sphecodes Geoffroyellus*, Ap. Bor. Revis. 194 should be *S. Geoffrellus*, Ap. Bor. 194.
 36. *Megachile Leachella*, Ap. Bor. 276 „ Ap. Bor. Revis. 276.
 „ *circumcincta*, Ap. Bor. 103 „ Ap. Bor. Suppl. 103.
 38. *Osmia xanthomelana*, Ap. Bor. Suppl. 270 „ Ap. Bor. Revis. 270.

Many of the references to "Ap. Bor. Revis." might well have been omitted altogether. The object of the Catalogue, as explained in the Report of the Council (see Proc. Ent. Soc. 1867, p. cxii.), is, by a judicious selection of citations, to refer the student to the best descriptions or figures of each species, and to the authors whose observations have contributed what is known of the habits and economy of the insects. Yet many of the passages in "Ap. Bor. Revis." to which reference is made are mere cursory observations on the species. If any one will refer to the pages cited under any of the following—*Colletes succincta* and *marginata*, *Sphecodes subquadratus*, *Halictus tumulorum*, *cylindricus* and *leucopus*, *Andrena florea*, *nigripes* and *pubescens*, *Nomada baccata*, *Cælixys rufescens*, *Megachile argentata*, *Chelostoma florissimæ*, *Heriades truncorum*, *Osmia rufa* and *fulviventris*, *Bombus terrestris* and *lucorum*—it will be seen in a moment what I mean. The only remark Nylander makes (in the paper cited) about *Cælixys rufescens* is, that it seems to be identical with his *C. apiculata*, and occurs in England and France; of *Andrena nigripes* we are simply told that *A. fulva* is a synonym; of *A. pubescens*, that *A.*

cincta is identical and occurs in Finland among junipers (neither *fulva* nor *cincta* is included in Mr. Smith's synonymy); and of *Nomada baccata*, all that is to be found at "Ap. Bor. Revis. 281" is a List of Species in which "*N. baccata*, Sm." occurs! These strike me as scarcely favourable specimens of "judicious selection."

Amongst the Aculeata, of all other groups, are found the most remarkable phases of insect development and (I may add) of insect intelligence and civilization. Ants and bees are Anglo-Saxons amongst insects. One would expect then to find in the Catalogue numerous references to accounts of the habits and economy; but I do not see anything to indicate which of the authors cited have worked out the life-histories of species; such guides as (ov.), (larv.), (devel.), (econ.), (anat.), &c., are entirely absent. I fancy indeed that the references of this kind are undesirably few. Réaumur is cited, but rarely; Swammerdam, Huber, and other illustrious names of the present and past generations are conspicuous only by their absence. I rejoice, however, to find that John Ray's account of the honey-bee has not been overpassed; though it might be supposed, from the form of the citation, that "le premier véritable naturaliste du règne animal" had anticipated the Linnean system of nomenclature; lest any one should suggest that for the last century and more the world has been in error, it may be well to observe that Ray's "*Apis domestica*" is no more the scientific name of the hive-bee than is the "*Apis Matina*" of Horace or the "*Apis Cecropia*" of Virgil. But great as is my admiration for Ray, I think some other works might advantageously have been referred to; and I may take this opportunity of calling attention to Bütschli's paper, "*Zur Entwicklungsgeschichte der Biene*" in the 20th vol. of the *Zeitschrift für wissenschaftliche Zoologie*, where, to quote the *Zoological Record* for 1870, "the author enters very minutely into the development of the various internal and external organs of the larva of *Apis mellifica*, from the earliest obtainable embryo." This ought to throw some light upon the endosmosis-theory of Major Munn (see *Proc. Ent. Soc.* 1870, pp. xxiv.—xxviii.).

The next point is the incompleteness of the synonymy. For instance, are not *Scolia 4-guttata* and *Sirex pacca*, Fab., *Sapyga 4-punctata*, Panz., and *S. varia*, Farg., all identical with *Sapyga 5-punctata* (p. 5)? yet none of these are mentioned. Are not *Trypoxylon atratum* and *Pelopæus unicolor*, Fab., *Psen pallipes*, Spin., and *P. serraticornis*, Jur., all synonyms of *Psen ater* (p. 19)? Are not *Crabro variat* Schr., and *Philanthus semicinctus*, Panz., referable to *Cerceris ornata* (p. 20)? not *Vespa spinipes*, Oliv., *Pterochilus dentipes* and *tinniens*, Schæf. = *Od melanocephalus* (p. 21)? Are not *Vespa 4-cincta*, Fab., *V. gazella*, Panz., *V. yv* Christ, and *O. tricinctus*, Schæf. = *O. trifasciatus*? Is not *Prosopis atrata*, Fab. = *P. signata* (p. 23)? Are not *Apis rufa*, Christ, and *Melitta picea*, Kirby = *Spheco gibbus* (p. 24)? And is not *Andrena 4-punctata*, Fab. = *A. Hattorfiana* (p. 26)?

So at least we were told in the British Museum Catalogue! It cannot be all these determinations of the older authors' species have since been proved correct! If not, it follows that the synonyms in the present Catalogue are selected from what might have been given.

But to leave the older authors, and come nearer to our own. *Crabro hyalinus*, Shuck., a synonym of *C. luteipalpis* (p. 13)? Are not *Spheco similis* and *piceus*, Wesm. = *S. gibbus* (p. 24)? Are not *Andrena fulva*, *cincta*, *clypearis*, Nyland., synonyms of *A. nigriceps*, *pubescens*, and *fucata* re

(p. 29)? Is not *A. barbatula*, Zett. = *A. albicrus* (p. 30)? and *A. subopaca*, Nyland. = *A. parvula*? Is not *Nomada Marshamella*, Nyland. = *N. Lathburiana* (p. 33)? and *N. neglecta*, Schæf. = *N. Roberjeotiana*? And is not *Megachile fulviventris*, Zett., a synonym of *M. Willughbiella* (p. 36)?

Again, is Thomson wrong when he gives *Crabro affinis*, Wesm., as a synonym of *C. pubescens*? Is Gerstæcker wrong when he gives *Caelioxys fissidens* and *fraterna*, Först., as synonyms of *C. 4-dentata*? and *C. trinacria* and *diglypha*, Först., as synonyms of *C. rufescens*? And is Schenck wrong when he gives *C. apiculata*, Först. (*nec* Nyland.), and *divergens*, Först., as synonyms of *C. simplex*?

Or to turn to British authors—Why is Moses Harris ignored? What has become of the *Vespa superba*, *exultans*, *petulans*, *parietum* and *vexator* of Harris? of the *Apis flavicollis* of Sowerby? of the *Melitta lugubris*, *nudiuscula*, *contigua*, and *digitalis*, of the *Eucera linguaria*, *Apis 6-cincta* and *Lecana*, of Kirby? I find no reference to any of these.

And lastly, what has become of the *Crabro vestitus* and *scutellaris*, *Vespa borealis*, *Hyleus plantaris*, *Sphecodes pellucidus*, *Andrena rubricata*, *distincta*, *atra*, *æstiva*, *apicata*, *lacinia*, *articulata* and *nigrifrons*, *Nomada vidua* and *inquilina*, *Megachile albiventris*, *Osmia hirta*, *Apathus nemorum*, *Bombus montanus*, *monticola* and *flavonigrescens*, of Smith? Here are more than a score of names, each published by Mr. Smith for a British insect—yet in this Catalogue of British Insects not one of them is mentioned! No doubt these names all disappear as synonyms, but surely Mr. Smith should not have consigned them pauper-like to an undistinguished grave, but have given them decent burial, and have indicated the last resting-place of these, his own creations.

If it be said that, by consulting the British Museum Catalogues, the whereabouts of most of them may be discovered, I readily agree. But then we arrive at this dilemma. The synonymy of this Catalogue was either intended to be complete in itself, or it was not; if completeness were the intention, why these omissions? if not, why have done more than simply refer to the prior Catalogues? Why print any synonymy at all, except the corrections of previous errors? In short, it seems to me that of synonymy we have either vastly too much, or somewhat too little.

This seems a fitting place to notice that Costa has recently disputed Smith's conclusions as to the synonymy of certain species of *Cerceris*. According to Costa (*Ann. Mus. Nap.*, vol. 5, published in 1869, but to which no reference is made in the Catalogue), *Philanthus interruptus*, Panz., is distinct from *Cerceris 5-fasciata*;* *P. 5-cinctus*, Panz., is a ♂ var. of *Cerceris arenaria*, and is not attributable to *C. 5-fasciata*; and *P. sabulosus* and *4-cinctus*, Panz., are not the sexes of one species, his *P. sabulosus* belonging in fact to *Cerceris emarginata*.

Some of Mr. Smith's citations of synonymy are erroneous in form. Take *e. g.* *Olynerus parietum* (p. 21); it would be supposed that Wesmæel, Zetterstedt, St. Fargeau, Saussure, Smith, and Thomson all wrote the specific name *parietinus*, after Curtis. Take again *Hulictus xanthopus* (p. 25); it would seem as though St. Fargeau, Smith, Nylander, and Shuckard all adopted Curtis's name *Lasioglossum*

* Mr. Smith's references to Rossi are unfortunate. In the *Cat. Brit. Foss. Hym.* p. 192, we find "*Crabro 5-fasciatus*, Rossi, Faun. Etrus. Mant. i. 139, 207"; in the present Catalogue, "*C. 5-fasciata*, Rossi, P. E. i. 139." The true reference is *C. 5-fasciatus*, Rossi, Mant. i. 139 (and if the number of the species is to be added, 307).—J. W. D.

tringulum (which is misprinted *trinagulum*). And lastly, take *Saropoda bimaculata* (p. 39); the form of citation indicates that St. Fargeau, Smith, Curtis and Shuckard all followed Spinola in referring the insect to the genus *Anthophora*, but such is not the case.

So also *Evania variegata*, Latr. and others (p. 8), should be *Evania variegata*, Fab., *Ceropales variegata*, Latr. and others; *Cemonus unicolor*, Panz. F. G. 52, 24, should be *Spher unicolor*; *Hyleus dilatatus*, Nyland. Ap. Bor. 94 (p. 23) should be *Prosopis dilatata*, Nyland. Ap. Bor. Revis. 188; *Andrena denticulata*, Nyland. (p. 29) should be *A. Listerella*, Nyland.; *A. parvula*, Smith (p. 30) should be *A. minutula*, Smith; *A. xanthura*, Nyland. (p. 31) should be *A. chrysosceles*, Nyland. (*nec* Kirby); *Cilissa hamorrhoidalis*, Nyland. (p. 31) should be *Kirbya chrysura*, Nyland.; and *Anthophora retusa*, Nyland. Ap. Bor. 265 (p. 39) should be *Megilla retusa*, Nyland. Ap. Bor. Revis. 265. And in the top line of p. 25, the name *Melitta seladonia* is omitted before the reference to Kirby, Mon. Ap. Angl. ii. 57.

Others of the citations are misleading, if not erroneous. Take e. g. *Andrena Coitana* (p. 30). Any one would suppose from the reference "Nyland. Ap. Bor. 221" that Nylander recognised the species and adopted Kirby's name for it; but in truth Nylander confounded it with *A. nana*, and only mentions *Coitana* as a synonym of *nana*. Take again *Odynerus trifasciatus* (p. 21), under which we find a reference to "Wesm. Olyn. Belg. 7" (it should be p. 27); so far from treating *trifasciatus* as a species, Wesmael refers it to *O. parietum*.

At p. 27 of the Catalogue, under *Andrena rosæ*, we have the reference "*Melitta rosæ*, Kirby, Mon. Ap. Angl. ii. 83, ♀," and under *Andrena florea*, we have the reference "*Melitta rosæ*, Kirby, Mon. Ap. Angl. ii. 85 (*nec* Panz.)." Does this mean that the insect which Kirby supposed to be the ♂ of *A. rosæ* is in truth *A. florea*? or that the form which Kirby at p. 85 calls "Variety a" of *A. rosæ* is the Fabrician *florea*? or what does it mean?

At p. 29, under *Andrena picicornis*, we have the reference "*M. Lewinella*, Kirby, lib. cit. 149, ♂," and under *A. denticulata*, we have the reference "*M. Lewinella*, Kirby, lib. cit. 149, ♂ (var.)." If Kirby had described a typical *M. Lewinella*, and a variety, I should have conjectured that Mr. Smith's view was, that the typical form is the male of *picicornis*, and the variety not *picicornis* at all, but a ♂ var. of *denticulata*. But, on referring to the Monographia Apum Angliæ, I find only one form of *Lewinella* described; and I am driven to the conclusion that (according to Mr. Smith) *M. Lewinella* is not only the ♂ of *picicornis*, but is also a var. of *denticulata*—two forms which are not only treated as distinct species, but have no less than eight species placed between them.

Again, at p. 39, under *Anthophora retusa*, we have the reference "Dours, Mon. Anth. 172," and under *A. acervorum*, we have the reference "*A. retusa*, Dours, Mon. Anth. 172 (var.)." Unfortunately, I have not this work at hand; and I can only conjecture that Dours confounds two forms under one name *retusa*, at the same time indicating one of the forms as a "Var." But if this be the true explanation, ought not the citations to have run as follows?—

ANTHOPHORA RETUSA.—*A. retusa* (form. typ.), Dours, Mon. Anth. 172.

ANTHOPHORA ACERVORUM.—*A. retusa* (var.), Dours, Mon. Anth. 172.

In numerous cases, names are cited as absolute synonyms, whereas they belong to distinct races or forms, and this should have been indicated by the addition of

(var.) or some other abbreviation. For instance, *Apis ligustica* (p. 42) is rightly enough treated as not specifically distinct from *A. mellifica*; but no one will say that *A. ligustica* is an unqualified or absolute synonym of *A. mellifica*. At p. 40, the three forms described by Kirby as *Apis Rossiella*, *Francisana*, and *subterranea*, are all given simply as the ♂ of *Apathus campestris*; should not one have been indicated as the typical male, and the other two as varieties? And at p. 35, is not Nylander's *Calioxys hebes* (which somehow has got converted into *hebes*) sufficiently distinct from the normal *C. rufescens* to require the addition of (var.)?

When the sexes of the same species have been simultaneously described as distinct, I have always understood that when the two come to be re-united, and so require only one specific name, that of the male is adopted, and the female rejected. Dr. Knaggs's gallantry has led him to suggest that under such circumstances, the name of the female should be retained. (See Proc. Ent. Soc. 1868, pp. xliii, xlv.; Trans. Ent. Soc. 1871, p. 345). Mr Smith sometimes adopts the trivial name of the male, sometimes that of the female.

Thus, confining our attention to a decal from the 2nd vol. of the Mon. Ap. Angl., we have—

<i>Melitta fulvicornis</i> ,	p. 67, ♂ = <i>M. lævigata</i> ,	p. 75, ♀ ... HALICTUS LÆVIGATUS.
<i>M. pilosula</i> ,	p. 164, ♂ = <i>M. Gwynana</i> ,	p. 120, ♀ ... ANDRENA GWYNANA.
<i>M. atriceps</i> ,	p. 114, ♂ = <i>M. tibialis</i> ,	p. 107, ♀ ... A. ATRICEPS.
<i>M. Lewinella</i> ,	p. 149, ♂ = <i>M. picicornis</i> ,	p. 123, ♀ ... A. PICICORNIS.
<i>M. pubescens</i> ,	p. 141, ♂ = <i>M. fuscipes</i> ,	p. 136, ♀ ... A. PUBESCENS.
<i>M. denticulata</i> ,	p. 133, ♂ = <i>M. Listerella</i> ,	p. 137, ♀ ... A. DENTICULATA.
<i>M. contigua</i> ,	p. 140, ♂ = <i>M. fulvicrus</i> ,	p. 138, ♀ ... A. FULVICRUS.
<i>M. Coitana</i> ,	p. 147, ♂ = <i>M. Shawella</i> ,	p. 160, ♀ ... A. COITANA.
<i>M. subincana</i> ,	p. 158, ♂ = <i>M. connectens</i> ,	p. 157, ♀ ... A. CONNECTENS.
<i>M. Collinsonana</i> ,	p. 153, ♂ = <i>M. proxima</i> ,	p. 146, ♀ ... A. COLLINSONANA.

Out of these ten cases, it will be seen that Mr. Smith adopts the ♂ name in five and the ♀ in five, and I believe a like impartiality will be found to have been exercised, if all the instances of the kind which occur in the Catalogue were tabulated. Priority of place in the volume manifestly has not had any weight; and what the principle of selection is, I cannot discover; though I have no doubt that a good reason exists for each particular selection.

The Aculeata, with their males, females, and neuters, may be supposed to call special attention to questions of gender. I am one of those who think that the name of a genus is a noun substantive, with which an adjectival trivial name should be made to agree in gender. Consequently, when the Catalogue of Neuroptera was in progress, I was anxious to substitute *Lestes barbarus* for *Lestes barbara* (at p. 16); for surely if any generic names be masculine, *Lestes* must be one of them. So also in the present Catalogue, I note that *Passalæcus* (p. 18) and *Colletes* (p. 23) are nouns substantive of masculine gender; and consequently, that we ought to read *Passalæcus corniger* (not *cornigera*),* *Colletes succinctus*, *cunicularius*, *marginatus*, and *Daviesanus* (not *succincta*, &c.). I am aware that Standinger (see the Intro. to the Cat. Lepidop. Eur., p. xiii. ed. 1871) wishes to consider every specific name, once published, as a proper name, and would write *Lycana Minimus*, comparing it

* In the Ent. Ann. 1872, p. 102, Mr. Smith appears to refer this species to the genus *Diodontus*.
—J. W. D.

with "Pauline Frederic!" Thanks, however, to Wocke and Zeller, we have been spared this shock, for the present. Space will not permit me to argue the question here; I will therefore only observe that something more than the blandishments of Miss Pauline will be required to reconcile me to *Lycæna Minimus*, with or without the capital M. The Catalogue under review contains abundant intrinsic evidence that Mr. Smith has not adopted Dr. Staudinger's view; and I conclude that *Passalæcus* and *Colletes* are made feminine only by an oversight.

A more difficult question arises as to the gender of *Calioxys*. Apparently, the unvaried habit has been to treat it as feminine, probably because the species first included in it had already feminine trivial names—*e. g.*, *4-dentata*—being brought from *Apis* or *Anthophora*—or because the Greek noun which enters into the composition of the word is feminine. It is to be regretted that Latreille did not write *Ocygalia*; or, if he was bent on putting the cart before the horse, *Calioxia* would have been better than *Calioxys*. As having some bearing on this point, I may refer to the observations on the generic name *Trachys* by Dr. Kraatz, Col. Hefte, vi. 31; see also p. 116.

Whilst on the subject of gender, I may note two or three slips in the citations of authors. Thus, p. 11, Linné wrote *Sphex mystacea*, not *mystaceus*; p. 20, Rossi wrote *Crabro 5-fasciatus*, not *5-fasciata*. And the shade of the Rector of Barham must blush at having attributed to him a *Melitta rubicundus* (p. 24), and look uneasily at *Melitta 4-notatus* (p. 25) and *M. minutissimus* (p. 26); for the latter of which a wrong page also is cited.

Here also is the place to remark upon the anomaly of our having a *Crabro leucostoma* (p. 14) and a *Crabro chrysostomus* (p. 16). Many will be apt to think that both these specific names should terminate alike, either both *-mus*, or both *-ma*. I shall perhaps be told that—without going the length of Dr. Staudinger's proposition, and whatever *chrysostomus* may be, whether noun substantive or adjective—*leucostoma* is a noun substantive, "white-mouth," not an adjective, "white-mouthed;" and it is possible that, in support of this, I may be referred to E. M. M., vol. 5, where an attempt was made to shew that *Acanthosoma* is a neuter noun, and not a feminine adjective. Far be it from me to suggest a doubt as to the soundness of that argument! but I prefer to look at our *leucostoma* historically, and my "historic conscience" tells me that we ought to write *Crabro leucostomus*. The name originated with Linné, who described the insect as *Sphex leucostoma*. Now, though the Greek word is masculine (which doubtless led Mr. Smith into the above mentioned misquotation of *Sphex mystaceus*), Linné makes his genus *Sphex* feminine throughout, perhaps to correspond with *Vespa*. Thus we have *Sphex vaga*, *S. fusca*, *S. clypeata*, and so on. It is true we have *Sphex figulus*; and as the noun *figulus* was taken for the trivial name of one species, a noun *leucostoma* may have been taken for the trivial name of another species; and certainly Fabricius, when he removed the insect to the genus *Crabro*, did not write *Crabro leucostomus*. I fancy, however, that the specific name *leucostoma* was, with Linné, the feminine gender of the coined adjective *leucostomus*.

I have already remarked upon the name *Calioxys*; and, as a matter of choice, some might have preferred *Prionocnemis* to *Priocnemis*. But on the whole the nomenclature of the Aculeata is pretty free from malformations and barbarisms.

With reference to the correction, in scientific names, of slips of the pen in spelling, and misprints, see the observations in Stett. Ent. Zeit. 1870, pp. 85-87.

As might have been expected, the conclusion of the scholarly Zeller is in favour of such corrections being made. I hail Mr. Smith as a convert to this view; and he has applied the principle with such rigour that the *Methoca ichneumonides* of Latreille becomes *ichneumonoides* (p. 5).^{*} Such is my laxness, that I should probably have allowed *ichneumonides* to pass muster.

Amongst the minor blemishes of this Catalogue, there is a want of uniformity in the abbreviations employed and in the mode of citation of the very same work. Take *e. g.* Curtis's British Entomology; it is well known that the plates are numbered consecutively throughout the whole work, and do not commence afresh with each volume, and that the text is not paged, but each leaf bears the number of the plate to which it belongs. In the Catalogue, sometimes the volume and plate are both indicated, at other times only the number of the plate; and in the references to the text, the unnumbered second page of a leaf is generally referred to in a manner which will be best explained by an example. Thus, at p. 22, we find "*Odynerus scoticus*, Cur. B. E. iii. pl. 138," and "*O. pictus*, Cur. B. E. iii. 138." The reference to the plate is erroneous, *O. scoticus* not being figured; and both *O. scoticus* and *O. pictus* are mentioned (they cannot be said to be described—but they are mentioned) not on the leaf of text which belongs to pl. 138, but on the back or second side of leaf 137, so that if iii. 137 was not thought sufficiently definite, the correct reference would have been iii. 137 (*b*). The same thing occurs at p. 32, where *Panurgus lobatus*, Cur. B. E. iii. pl. 102, should be iii. 101 (*b*); and at p. 36, where *Megachile Leachella*, Cur. B. E. v. 219, should be v. 218 (*b*). Altogether I find no less than five different forms of reference to Curtis's plates, exclusive of the form of reference to the text; thus—

- p. 5. *Tiphia minuta*, Curt. Brit. Ent. xiv. pl. 644 [it should be pl. 664].
- p. 12. *Gorytes bicinctus*, Cur. B. E. v. pl. 524 [it should be xi.].
- p. 15. *Crabro subpunctatus*, Cur. B. E. xv. pl. 80 [it should be pl. 680].
- p. 18. *Diodontus insignis*, Cur. B. E. xi. 796 [*i.e.* the text: it should be 496].
D. gracilis, Cur. B. E. xl. pl. 496 [it should be xi.].
- p. 23. *Colletes fodiens*, Cur. B. E. ii. f. 85.
- p. 37. *Heriades truncorum*, Cur. B. E. pl. 504.

So also, we have "Fab. Ent. Syst." and "Fab. E. S.;" "Latr. Hist. Nat. Crust. et Ins." and "Latr. H. N.;" "Zett. Ins. Lapp." and "Zett. I. L.;" &c.

And, whilst on the head of uniformity, it may be well to note the diversity between the form in which, under precisely similar circumstances, consecutive species are sometimes catalogued. Take *e. g.*, *Megachile versicolor*, *pyrina*, and *odontura* (p. 36); or *Osmia parietina* and *pilicornis* (p. 38). *M. pyrina* and *O. parietina* follow the form usually employed in the List; but the other three do not. Moreover, under *M. versicolor*, a reference should be supplied to Zool. 1844, p. 697; and under *M. odontura* to Zool. 1849, App. p. lviii.

Occasionally we find the page correctly given, but the volume omitted. For instance, in the references to *Sphex gibba*, Lin. (p. 6), to *Larra pompiliformis*, Spin. (p. 10), to *Apis vestita*, Fab. (p. 28), to *Hylaeus florissomnis*, Fab. (p. 37, the pages of *H. florissomnis* and *maxillosus* have somehow been interchanged), to *Osmia Leaiana*, Spin. (p. 38), to *Anthophora retusa*, Blan. (p. 39), and to *Apis hortorum*,

^{*} In the Ent. Ann., 1872, p. 102, Mr. Smith includes *Methoca ichneumonoides* amongst the *Fossores*.—J. W. D.

Fab. (p. 42). In other cases we find the volume mentioned, but the page omitted. For instance, the genera *Astata* (p. 10), *Eumenes* (p. 20), and *Odynerus* (p. 21). One would have expected the works of Latreille to be accessible to supply these omissions; and in truth, in other references to the same works, the page is properly given. The references to Stephens are few and far between; one of the few is *Miscophus bicolor* (p. 10), where pl. 42, f. 3, instead of pl. 47, f. 4, is cited by a mistake, the origin of which is apparent on turning to the 7th vol. of the Illustrations.*

A short list of Errata is printed at p. 43 of the Catalogue; but it is manifest from what precedes that this list is not exhaustive. Neither the Introduction nor the Index has quite escaped. I have in fact noticed something like a hundred mistakes; how many are due to the copyist, and how many to the printer, I have no means of ascertaining. Most of these are fortunately minute and harmless, but the number of wrong pages is not inconsiderable. The extreme difficulty however of preparing and printing a Catalogue of this sort must always be borne in mind. The whole work is an endless series of figures and abbreviations, each one of which requires careful attention, and there is no context to give either a suggestion of error or a clue to the intention. The only wonder is therefore that the Errata are not more important.

Finally, the typography, paper, and general aspect of the Catalogue are all that can be desired, and the price at which it is published places it within everybody's reach. The little blemishes which I have alluded to are the spots on the sun's face, and I am aware that I run the risk of being considered hypercritical in drawing attention to such minutiae. When all is said, there remains no small debt of gratitude to Mr. Smith for the compilation. Knowing by experience the monotonous drudgery of such a task, I use no empty formula when I express my thanks for what he has done. And if I have ventured to criticize in detail, I am sure he knows me better than to attribute this to any desire on my part to carp at his work, and will give me credit for wishing only to avoid the repetition in the Catalogues of the future of what seem to me to be the defects of the present.

It is understood that the next instalment will include the *Ichneumonidae* and some other Parasitic Hymenoptera, by the Rev. T. A. Marshall. I presume the *Chrysididae* will be included in this Part, and will probably form the commencement of it, since they would seem to be in natural sequence to the Aculeata. The printing of these Catalogues is a severe drain upon the resources of the Society, and Entomologists at all events would be glad if by external assistance—such as a grant in aid from the Government Grant Committee of the Royal Society—more rapid progress could be made in the publication. One thing is certain, that if the scheme is carried out, all the money will have been well spent; whilst if it should fall short of completion for want of funds, Entomological Science, if she will not sustain a heavy loss, will at any rate fail to realize a gigantic gain. I conclude then by wishing success to the proposed “General Catalogue of the Insects of the British Isles,” and may it be soon finished as well as it has been begun!—J. W. DUNNING, 24, Old Buildings, Lincoln's Inn, January, 1872.

* Mr. Smith places the genera *Tachytes*, *Miscophus*, *Dinetus*, and *Astata* in a family which he calls *Larridae*. Surely the *Larridae* must be the family of which *Larra* is the typical genus. But on a reference to Proc. Lin. Soc. xi. pp. 363, 367, it will be seen that so far from regarding *Larra* as the type of the *Larridae*, Mr. Smith places it in the family *Nyssonidae*. If *Larra* belongs to the *Nyssonidae*, some other name should be found for the family of which *Tachytes* is a member. We have long been accustomed to the play of Hamlet with the part of Hamlet left out, and we have recently heard a good deal of a Republic without republicans; but a fam. *Larridae*, to which the gen. *Larra* does not belong, is insupportable.—J. W. D.

Haggerstone Entomological Society.—This Society held its fourth Annual Exhibition on the 23rd and 24th November last, at the rooms, Brownlow Street, Dalston. The Exhibition was largely patronised on both evenings, the rooms at times being inconveniently crowded. Amongst the exhibitions were the following: Mr. Dow—*Nola albula*. Dr. Gill—*N. strigula*, *Zygæna exulans*, &c. Dr. Knaggs—*A. helvetina* of Boisduval, a species new to Britain. Mr. Bond—an extraordinary var. of *B. trifolii*. Mr. J. Moore—*A. alni* and *C. erythrocephala*. Mr. T. Cooke—*D. pulchella*; also some rare exotic *Lepidoptera*. Mr. Davis—*Pempelia albariella* of Zeller ("*Phycis Davisellus*" of Newman) and *S. sacraria*. Mr. Clarke—a single example of each species of the British butterflies. Mr. Healy—"life-histories" of several species of saw-flies. Mr. E. G. Meek—*D. pulchella*, *M. ostrina*, *X. conformis*, and *N. centonalis*. Mr. A. Harper—*H. armigera*, *H. dipsacea*, *A. melanopa*, *D. rubiginea*, &c. Mr. Bartlett—*L. quadra*, *C. ocularis*, *D. roboraria*, and "*Agrotis comes*" (var. *Curtisii*). Mr. D. Pratt—*L. boscana*, *E. hybridellana*, *E. venustula*, *H. aurovaria*, &c. Mr. Gates—*A. flexula*, *H. Christiennana*, *P. ornatella*, &c. Mr. J. W. Rupell—*C. ocularis*, *X. aurago*, and *S. chrysidiformis*. Mr. Bush—*N. hispidaria*, and fine var. of *C. bilineata*. Mr. Lormier—black *L. Sibylla*, *S. sacraria*, &c. Mr. J. Bryant—*Z. exulans*, *A. myrice*, &c. Messrs. C. Williams, Raine and Hoey exhibited cases containing preserved larvæ; also "life-histories" of several species of *Lepidoptera*. Mr. H. Moore—some handsome cases of ornamental entomology.

The following gentlemen also exhibited—Messrs. Barlow, J. Meek, Munday, Boulden, Gibson, Lopelley, Franklin, Reynolds, Bramley, Glover, Harrison, Hillman, Oldham, and Chitty.

Altogether, the Meetings were completely successful.

ENTOMOLOGICAL SOCIETY OF LONDON, 1st January, 1872.—A. R. WALLACE, Esq., F.Z.S., President, in the chair.

The Secretary read a communication from Mr. Gould respecting birds as enemies of dragon-flies. Mr. Gould had no doubt that the Hobby and Kestrel attacked the larger kinds; and he had observed sparrows, &c., preying upon *Agrioidæ*, the wings of which they carefully detached.

Mr. Müller called attention to a paper by Dr. Emilo Joly, in which the author associated the so-called crustaceous genus *Prosopistoma* with the *Ephemeridæ* as immature conditions.

Mr. Mo Lachlan made some further remarks on certain Linnean species of *Myrmeleon*.

Mr. F. Smith communicated notes by Mr. J. T. Moggridge respecting the winter habits of ants of the genus *Aphenogaster*, as observed by him at Mentone. These notes revived the question as to whether any ants store up seeds for winter provision; and Mr. Moggridge's observations tended to prove that such is the case. These ants excavated galleries, and in the chamber at the end of the galleries there was always to be found a stock of the seeds of late-fruited plants, which he had seen the ants conveying into their runs. Outside the galleries there was generally a heap of empty husks, the farinaceous contents having been extracted through a hole on one side. Seeds which commenced to germinate were brought out, and the radicle having been bitten off, they were again transported into the interior. Myrmecophilous beetles were not present in the perfect state; but there was a *Lepisma*, and also Coleopterous larvæ. Mr. Moggridge promised to communicate to the Society the result of continued observations.

Mr. Butler read a paper on *Pericopides* in the collection of Mr. W. Wilson Saunders.

LIST OF MACRO-LEPIDOPTERA OBSERVED IN NORTH-WEST MOROCCO IN 1870-71.

BY TROVEY BLACKMORE.

Two years ago, I contributed to the Ent. Monthly Magazine a list of *Lepidoptera* observed at Tangier, in the spring of 1868. Since that time I have spent the greater part of two winters and springs in the same locality, and have collected a large number of insects of most orders, a record of which I hope from time to time to furnish to this magazine. Pending the examination and determination of some of my captures of *Coleoptera* and *Hemiptera*, I annex the following list of the *Lepidoptera* with which I have met. It will be noticed that I have taken specimens of every species captured by me in 1868, with the exception of *Crateronyx Philopalus*.

I have marked with an O. several species taken by Signor Olcese, a resident Italian entomologist, whose attention is mainly devoted to *Coleoptera*, but in whose boxes I found a few *Lepidoptera*, all taken in the immediate vicinity of Tangier. In the following list, I have adopted the arrangements of Doctor Staudinger's recent "Catalog der Lepidopteren des Europäischen Faunengebiets."

RHOPALOCERA.

Papilio Podalirius, L. The variety *Feisthamelii*, Dup., occurs commonly in the spring at Tangier. I met with the typical form at Fez. Dr. Hooker, who has this year visited the Atlas mountains, saw this species at an elevation of 6000 feet.

Papilio Machaon, L. O.

Thais Humina, L. Not uncommon in March. The variety *Medesicaste*, Ill., abundant.

Pieris brassicae, L., and *rapae*. Both abundant, and the specimens very large.

Pieris napi, L. Several.

Pieris Dauidiae, L. One small and very dark specimen, early in April.

Anthocharis Belemia, Esp. Common on sunny places in December, January, and February, frequenting the flowers of a sweet-smelling *Iberis*. Later in the year, April and May, appears the variety *Glaucus*, Hb., in the same localities. It seems to be a first brood, of which the typical *Belemia* is the second.

Anthocharis Belia, Cr. A single specimen in April.

Anthocharis Eupheme, L. (*Demi*, Pierret). I secured a splendid series of this beautiful species, which is common near Tangier in the early spring. The females are rare, occurring in the proportion of one to every ten males.

- Colias Edusa*, F. Abundant, the ab. ♀ *Helice*, Hb., not uncommon.
- Rhodocera rhamni*, L. Common.
- Rhodocera Oleopatra*, L. Common.
- Thecla ilicis*, Esp. O.
- Thecla rubi*, L. Abundant.
- Thestor Ballus*, F. Common.
- Thestor mauritanicus*, Lac. I was so fortunate as to capture two specimens (males) of this scarce species.
- Polyommatus Phleas*, L. Abundant.
- Lycæna Pelicanus*, Lang. A specimen at Tangier in May, and a second at Oulad-Khalifa, 100 miles S. of Tangier, May.
- Lycæna Lysimon*, Hb. One specimen, December.
- Lycæna Astrarche*, Bgstr. (*Agestis*, W. V.). Common early in May.
- Lycæna Argiolus*, L. Abundant, March and April.
- Lycæna melanops*, Boisd. Several specimens on the Jibel-el-Kebir, a mountain near Tangier.
- Charaxes Jasius*, L. O.
- Vanessa Atalanta*, L. Very abundant.
- Vanessa cardui*, L. Very abundant.
- Pararge Egeria*, L. The variety *Meone*, Esp., common throughout the winter.
- Epinephile Janira*, L. Was represented by the form *Hispulla*, Hb.
- Epinephile Ida*, Esp. Abundant in May.
- Ctenonympha Arcanoides*, Pierret. Common, April.
- Spilothyrus alcea*, Esp. (*malvarum*, Hb.). The variety *australis*, Zell., of frequent occurrence.
- Syrichthus Alveus*, Hb. Several, April.
- Hesperia Actæon*, Esp. Common in a marshy spot at the foot of the Dar-a-Clow hills, 25 miles S. from Tangier.

SPHINGES.

- Acherontia Atropos*, L. O.
- Deilephila livornica*, Esp. Abundant.
- Deilephila Celerio*, L. Common.
- Macroglossa stellatarum*, L. Abundant.
- Naclia punctata*, F. One specimen of the form *servula* (Berce, Ann. Soc. Ent. Fran., 1862,) taken by Signor Olcese.

BOMBYCES.

- Deiopeia pulchella*, L. O.
- Arctia villica*. Several at light, end of April.

Euprepia pudica, Esp. O.

Zenzera pyrina, L. (*æsculi*, L., Syst., Nat. xii.). O.

Orgyia antiqua, L. O.

Porthesia similis, Fuess. (*auriflua*, W. V.). O.

Bombyx trifolii, W. V. Bred commonly by Signor Olcese. Specimens which he has given me appear to be the variety *retamæ*, H. S.

[*Crateronyx Philopalus*, Donzel. In the Ent. Monthly Magazine, Vol. v, p. 300, I record the capture at Tangier, of a large unknown Bombyx. This proves to be a species captured thirty years ago, in the province of Constantine, in Algeria, described and figured by Donzel, in the An. Soc. Ent. de France, 1842, p. 198, under the name of *Bombyx Philopalus*. Dr. Staudinger refers it doubtfully to Duponchel's genus *Crateronyx*.]

Cerura sp. —. Pupæ exactly resembling those of *Cerura vinula*, L., were common on poplar trees near Tangier, but I did not succeed in rearing the perfect insect.

NOCTUÆ.

Bryophila perloides, Gn. One specimen, O.

Agrotis obscura, Brahm. (*ravida*, W. V.). Several.

Agrotis pronuba, L. Abundant.

Agrotis puta, Hb. Common at light.

Brotolomia meticulosa, L. O.

Calymnia trapezina, L. O.

Calophasia platyptera, Esp. A fine specimen bred from a pupa enclosed in a cocoon formed of coloured lichens.

Cucullia chamomillæ, W. V. One specimen in April.

Plusia gamma, L. In excessive abundance in the spring.

Heliothis peltigera, W. V. Abundant.

Acontia lucida, Hufn. Variety *Albicollis*, F. O.

Acontia luctuosa, W. V. Several in the collection of Signor Olcese, and one taken by myself at El-Araish, early in June.

Thalpochares ostrina, Hb. A fine specimen at light, in December.

Thalpochares parva, Hb. One specimen, January.

Agriphila trabealis, Scop. (*sulphuralis*, L.). O.

Grammodes algira, L. One bred from pupa under poplar bark, May.

Spintherops spectrum, Esp. O.

Hypena lividalis, Hb. Common.

Hypena obsitalis, Hb. Common.

GEOMETRÆ.

Acidalia vittaria, Hb. Several specimens, end of April.

Acidalia ochrata, Scop. Some very large specimens on the banks of the Wad-Sebou, a river 90 miles S. of Tangier.

Acidalia virgularia, Hb. The variety *calcearia*, Z., common early in May.

Acidalia degenaria, Hb. A specimen of variety *rubraria*, Stgr., taken by Signor Olcese.

Eubolia gazella, Kollar? A single ♂ specimen of a *Eubolia* taken by Signor Olcese has been returned to me by Dr. Staudinger, to whom I sent it for determination, as being probably a variety of *gazella*, Kollar. This species has hitherto been captured only in Egypt, and its occurrence so far west as Tangier, is remarkable. The specimen also approaches *Eubolia perviaria*, of Lederer, a species peculiar to Syria (Beirut).

Sterrhia sacraria, L. Common.

Eupithecia pumilata, Hb. An abundant species.

PYRALIDINA.

Aglossa pinguinalis, L. Common.

Asopia jarinalis, L. Abundant. The specimens which I preserved are much darker than English types of this species.

Scoparia angustea, Stph. One specimen.

Threnodes pollinalis, Schiff. O.

Botys sanguinalis, L. The variety *hematalis*, Hb., common.

Botys polygonalis, Hb. Common.

Botys verbascalis, W. V. O.

Botys ferrugalis, Hb. Abundant.

Eurycreon palealis, Schiff. Common.

Nomophila noctuella, W. V. (*hybridalis*, Hb.). Very abundant.

Nephopteryx Dahliella, Tr. O.

(A specimen of *Cerastis*, and one of *Cidaria* cannot be assigned to any known species of those genera, but the examples, both of which were captured at light, are not in sufficiently good preservation to admit of being described as new species.)

The Hollies, Wandsworth :

October 11th, 1871.

LIST OF *TORTRICINA* AND *TINEINA* COLLECTED IN NORTH-WEST MOROCCO BY MR. TROVEY BLACKMORE, IN 1870-71.

BY H. T. STAINTON, F.R.S.

Before proceeding to enumerate the species, it may be as well to preface my remarks with the following account of the localities, which I received from Mr. Blackmore, in the month of June, 1870.

"The greater number of the specimens were obtained from the *Marshen*. This is a plateau about five or six hundred feet above the sea, extending from the Western side of the citadel of Tangier to the Jews' river, a distance of a mile. At the end nearest the town, it is covered with short herbage, and is surrounded with gardens, having hedges of cane, aloes, or prickly-pears. Where it slopes down to the Jews' river, it is very rocky, and amongst the rocks, *Cistus*, *Coronilla*, *Myrtle*, and a great profusion of shrubs and flowers, were growing. This was my principal collecting ground for the *Micros*.

"Past the Jews' river is another hill, much loftier than the *Marshen*. I should fancy it must be over 1200 feet high. It is called *Gibel-el-Kebir* (Great Hill), and from the very great variety of vegetation with which it is covered, I should fancy that, if well worked, it would yield a goodly number of insects of all orders; but I had few opportunities of collecting on it, as it was almost too far for my walking powers.

"*Swany* is a small village about a mile and a-half out of Tangier; and in a lane, uniting the two places, I captured a few things. This lane is bordered on both sides by gardens and orchards, fenced in by canes or aloes, but among them *Clematis*, *Aristolochia*, *Sarsaparilla* &c., &c., were growing.

"The *Wad-el-Halk* locality is a meadow by the edge of a river of that name, East of Tangier, the only decent bit of grass in that neighbourhood. Between the *Wad-el-Halk* and Tangier are some extensive sand-hills, where scarcely anything but a peculiar kind of white broom will grow."

TORTRICINA.

Tortrix pronubana, Hübner. One specimen from a hedge near the town of Tangier, April 25th, 1870. According to my own experience, this is a common pest in the Mediterranean region, resembling in its omnivorous habits our *T. rosana* and *T. xylosteana*.

Grapholita succedana, Frölich. Four specimens taken amongst broom on the sand-hills, January 4th to 20th, 1870, may, perhaps, be referable to southern forms of this species: they look, however, very different from our English *ulicetana*.

Grapholita, n. sp. ? Allied to *microgrammana*, but with narrower anterior wings and white posterior wings. Two specimens, taken amongst broom on the sand-hills. January 15th, 1870.

Carpocapsa pomonella, L. One specimen, taken in the house, May 1st, 1870.

Phthoroblastes spiniana, Dup. One specimen, Gibel-el-Keber, March 18th, 1870.

Eupæcilia, sp. ? A single specimen of a dull-coloured *Eupæcilia* from a new locality would not be easily named, and I therefore refrain from the attempt. Taken on an aloë hedge, at Marshen, April 20th, 1870.

Lozopera, n. sp. ? This is so sharply marked that I feel strongly tempted to describe it as new. The straw-coloured anterior wings have two rather broad, oblique, reddish-brown fasciæ, of which the outer one is furcate exteriorly towards the inner margin, the fork, however, not attaining the inner margin ; unless it be a form of *Cochylis sanguinana*, Treitschke (Staud. and Wocke, 859), I expect it will prove a good species. One specimen, in very good condition, taken at Marshen, among grass, April 21st, 1870.

TINEINA.

Solenobia pretiosa, n. sp. ? A very neat and delicate looking insect ; in form of wing closely resembling *S. lapidicella*, but much paler, and with the reticulations of the anterior wings more neatly expressed, and with the head pale yellow ; antennæ not pectinated, but slightly pubescent. Exp. al. 5 lines. One specimen, taken amongst low plants, at Marshen, April 26th, 1870.

Blabophanes ferruginella, Hübner. Four specimens, taken in the house, December 10th, 1869.

Tinea granella, L. A dark specimen, taken in the house, March 31st, 1870.

T. nigripunctella, Haw. One specimen, in the house, April 10th, 1870.

T. fuscipunctella, Haw. Two specimens, taken in the house, December 4th and 10th, 1869.

T. chrysopterella, H.-S. One specimen, near Fez, in the spring of 1871.

Micropteryx imperfectella, Staudinger. Eight specimens, mostly in very fine condition, found amongst low plants in a lane near Tangier, March 19th, 1870.

These specimens are certainly specifically identical with Mr. Blackmore's previous capture in March, 1868, recorded in this Magazine, Vol. v, p. 300, but are in far better condition. I still believe

that they are Staudinger's *imperfectella*; but Herrich-Schäffer's figure, which Staudinger says in the Stettin. Ent. Zeit., 1859, p. 266, is "recht gut," represents the basal spot in a wrong position.

Unless a *Micropteryx* is in very good condition, it is sometimes no easy matter to trace the form and outline of the markings, and I attribute to this cause the discrepancy between Herrich-Schäffer's figure and the specimens I have now before me. In these, the first spot is transversely placed at some distance from the base, and begins at the sub-costal nervure, or even a little above it, and reaches to the fold; the basal and dorsal portions of the anterior wings are golden, but the costal portion, after the first spot, is brilliant crimson. It is a much more brilliant insect than *M. Paykullella*, though the position of the three posterior spots is very similar; the first spot of *M. imperfectella* is totally unrepresented in *M. Paykullella*.

Plutella cruciferarum, Zell. Two males and three females, taken amongst brambles, at Marshen, April 26th, 1870.

Depressaria bipunctosa, Curt. A worn, hibernated specimen, which I think is referable to this species; it was found under aloe leaves, January 16th, 1870.

Gelechia vilella, Zell. Two specimens, found in the house, January 20th, 1870.

G. (Lita) subdiminutella, Stain. A single specimen (which I believe to be referable to this species) was taken on a hedge on the road to Swany, April 28th, 1870.

Sophronia, n. sp.? Closely allied to *chilonella*, and, unfortunately, in very bad condition; but on both wings I see under the end of the white costal streak, a small white blotch on the disc, with which I am not acquainted in any described species of the genus. A single specimen, much worn, taken amongst *Coronilla*, at Marshen, April 26th, 1870.

Pleurota bicostella, L. One specimen, amongst rushes, Gibel-el-Keber, April 27th, 1870.

Butalis senescens, Stain. Mr. Blackmore has collected a series of an insect which agrees precisely with my Mentone specimen, which I referred to *B. senescens* (Tineina of Southern Europe, p. 222). One of his specimens was captured amongst rushes, at Gibel-el-Keber, April 27th, 1870, in the immediate vicinity of *Cistus* bushes; the others were taken in *Cistus* flowers, at Marshen, May 1st, 1870. It seems scarcely possible that this should be identical with our British *Thymus*-feeding *B. senescens*; and I should not be at all surprised if, eventually, its claim to rank as a distinct species were made out.

Butalis tangerensis, n. sp. Closely allied to *B. chenopodiella*, but wants both the distinctive characters of that species, namely, the pale spot in the apical cilia of the anterior wings and the bare streak in the posterior wings. Anterior wings dark fuscous, with pale greyish markings; first, an oblique blotch from the inner margin, near the base, reaching to the sub-costal nervure; then, a larger, less defined, blotch, above the anal angle, comprising three black dots, one on the inner margin, one on the fold, and one a little beyond it, above the fold; towards the end of this blotch are a few black scales, forming a short, oblique streak. Exp. al. $6\frac{1}{2}$ lines. One specimen, taken near Tangier, in the spring of 1871.

Acrolepia vesperella, Zell. A single specimen, much worn, taken on the sand-hills, East of Tangiers, on the 9th of February, 1870.

Coleophora, n. sp. ? Closely allied to *C. badiipennella*, but neater and paler. One specimen, amongst low plants, at Marshen, April 22nd, 1870.

C. fuscicornis, Zell. One specimen, near Tangier, in the spring of 1871.

C. cæspititiella, Zell. Two specimens, among low plants, at Marshen, April 20th and 26th, 1870.

Pyroderces argyrogrammos, Zell. One specimen, among low plants, at Marshen, April 20th, 1870. Monsieur Millière now takes this insect at light in his garden at Cannes, hence I am in hopes we shall soon ascertain the habits of the larva.

Elachista sepulchrella, n. sp. This is so very distinct that I have no hesitation whatever in describing it as new. At a first glance, I thought it was *E. disemiella*, Zell., but, on comparing the two insects, I found the positions of the two black spots were different; and the wings in *E. sepulchrella* are all broader and shorter than *E. disemiella*, and the posterior wings much darker. The last spot in *E. sepulchrella* is on the fold, but placed more posteriorly than in *E. disemiella*; the discoidal spot is about half-way between the first spot and the apex of the wing. Exp. al. $4\frac{1}{2}$ lines. One specimen, at the Swaney burial place, February 8th, 1870.

Urodeta cisticolella, Stain. Three specimens, taken April 27th, 1870, amongst rushes, at Gibel-el-Keber, in the immediate vicinity of *Cistus* bushes; and May 1st, 1870, in *Cistus* flowers, at Marshen. These were the first flown specimens I had seen, and I was rather perplexed at first where to refer them; placed among a series of *Butalis senescens* (taken in the same localities, at the same date), I thought of a second and much smaller species of *Amphisbatis*, but when I referred to the palpi, I perceived they could be no other than my Cannes insects, noticed in the 'Tineina of Southern Europe,' p. 226.

Tischeria complanella, Hübner. One, amongst bracken, Marshen, April 26th, 1870; and one, on a hedge along the roads to Swany, April 28th.

T. angusticollis, Zell. One, amongst low plants, Marshen, April 26th, 1870.

Lithocolletis tangerensis, n. sp. This is the same as the un-named *Lithocolletis* noticed by me amongst Mr. Blackmore's previous captures at Tangier, in March, 1868 (Ent. Mo. Mag., Vol. v, p. 301), the suggestion was there thrown out that it was attached to *Coronilla*. I have now before me nine specimens, some in very fine condition, beaten from *Coronilla*, at Marshen, April 20th, 1870.

Somewhat allied to *L. scopariella*, but a shorter winged and paler insect; indeed, the palest specimens would be best described by treating white as the ground colour, thus:—Anterior wings white, with a small, pale golden blotch along the costa, at the base, and a smaller one near the inner margin; nearly in the middle of the wing is an angulated, pale golden fascia, and a little beyond the middle is another similar fascia, beyond the apex of which are two pale golden spots on the costa, and one on the inner margin; none of these markings have dark margins; a dark hind marginal line in the cilia is faintly indicated, and is preceded by a small, dark, apical spot. Head white, tinged with pale golden. Exp. al. $3\frac{1}{2}$ lines.

Cemiostoma, n. sp.? One of the *spartifoliella* group, but smaller than any of our European species. Exp. al. $2\frac{1}{2}$ lines. Two specimens, taken among herbage, near *Coronilla* bushes, at Marshen, April 20th, 1870.

Nepticula aurella, Fab. One, on an aloe leaf, near Tangier, March 16th, 1870.

PTEROPHORINA.

Amblyptilia acanthodactylus, Hübner. One, among low plants, at Marshen, April 22nd, 1870.

Oxyptilus latus, Zell. One, near Tangier, in the spring of 1871; and a worn specimen, probably referable to this species, was taken on the road to Swany, April 28th, 1870.

Mimæseoptilus serotinus, Zell. A worn specimen, probably referable to this species, was taken on grass, at Marshen, April 20th, 1870.

Leioptilus carphodactylus, Hübner. A worn specimen, probably referable to this species, was taken among low plants, at Marshen, April 22nd, 1870.

NOTES ON *CICINDELIDÆ* AND *CARABIDÆ*, AND DESCRIPTIONS OF
NEW SPECIES (No. 13).

BY H. W. BATES, F. L. S.

Genus *OXYGONIA*.

Mannerheim, Bull. Moscou, 1837, ii, 17.

Amongst the many fine and rare insects brought home by that prince of collectors, Mr. Buckley, from his second journey to Equador, are six new species of this splendid genus of tiger-beetles. Most of the *Oxygoniæ* previously known have been described from unique examples, and consequently from one sex; but Mr. Buckley succeeded in obtaining numerous specimens of both sexes of four of his species, and has thus enabled us to study the sexual differences and the range of variation in the genus. The males of two of the species (*O. gloriola* and *Buckleyi*), from their rich colouring, are among the handsomest of the family.

In a short paper published in the Transactions of the Entomological Society (1871, p. 378), I pointed out the affinities of the genus, which for many years had been misunderstood. The *Oxygoniæ*, in fact, belong to a natural group of true *Cicindelinae*, differing structurally from *Cicindela* only by their very elongate body and sulcated tarsi; the latter character being, however, not without some exceptions. The principal genera of the group are *Odontocheila* (Tropical America), *Phyllodroma* (Tropical America), *Peridexia* (Madagascar), and the less typical *Thopœutica* (Malay Archipelago). The prevailing style of markings of the elytra differs from that of *Cicindela* in consisting of two, three, or four small white marginal spots (sometimes connected with a lateral stripe), and in the absence of the usual lunules and bands. In the aberrant *Thopœutica*, only, is observed a tendency towards the complete humeral and apical lunules and central band so characteristic of *Cicindela*. The group is distinguished from the true *Cicindelæ* also by their habits; the majority avoiding open, sandy, and sunny places, and dwelling in the shades of the tropical forest, where they settle on foliage almost as often as on the ground. From Mr. Buckley we learn the interesting and entirely new fact that the *Oxygoniæ* are found chiefly on mossy stones in the beds of rapid streams, in company with the *Oxycheilæ*, which Goudot long ago reported to frequent similar haunts. Mr. Wallace has stated the same fact regarding *Thopœutica gloriosa*, which he could take only by wading in the cold waters of mountain torrents in Northern Celebes. Mr. Buckley discovered the haunts of the Equadorian *Oxygoniæ* accidentally, while bathing in the River Upano, or Upper Morona, near Macas. Crawling on to a rock in mid-stream, he (or,

rather, his companion Villagomes) found the first specimen, and it was by dint of swimming from rock to rock in the cold, rapid waters that he succeeded in obtaining a good series of three of his species, besides two new *Oxycheilæ*. I had myself occasion to observe that some of the handsomest species of *Odontocheila* (a closely-allied genus) preferred the margins of shady streams. I never found *O. Batesii* except on aquatic plants and grasses, and only in the shade of the forest.

As to the generic characters, they require some modification. The bi-spinose apices of the femora are not a constant feature; and the "*elytra apice explanata, singulatim acute acuminata*" of Mannerheim applies only to the males of some species. The labrum in none of the eight species in my own collection agrees with the definition originally given by Mannerheim, "*quinque dentatum, dentibus tribus mediis approximatis, minutis, acutis;*" it is, however, as in Mannerheim's typical species, always short and transverse; but in none, male or female, is there more than one central tooth; this is always a little elevated, and sometimes projects as a longish spine, though in one species it is short and obtuse: beneath this central tooth, on each side, the fore margin is a little uneven, but there is nothing approaching the tridentate form, and no trace of an exterior tooth on each side; the angles are rounded or truncate. The labrum offers no sexual differences. The mandibles are longer and have longer and stronger teeth than in *Odontocheila*, but the palpi afford probably the best structural means of distinction, the terminal and penultimate joints of the maxillary being much elongated and scarcely unequal in length; thus differing from *Odontocheila*, in which the penultimate is much abbreviated. The antepenultimate ventral segment in the ♂ is very deeply cleft in the middle, and the third segment strongly dilated posteriorly on each side.

The following notes comprehend all the known species of this rare and beautiful genus.

OXYGONIA SCHENHERRII.

Mannerh., Bull. Mosc., 1837, ii, 19.

Mannerheim described this typical species from a single male taken near Antioquia in the valley of the Cauca, and therefore distant some 500 miles of latitude from the locality of Mr. Buckley's species. It is 7 lines in length, obscure brassy, the elytra with the margin and suture narrowly bordered with green, and having three marginal spots, the humeral and apical oblong, and the middle one rounded. The colour of the labrum is not mentioned; the elytra are given as regularly and finely punctured, with their apices singly produced and acute. The

four posterior femora are acutely bispinose. The five-dentate labrum readily distinguishes it from *O. moronensis*, the only species approaching it in colour.

O. PRODIGA.

Cicindela (Phyllodroma) prodiga, Erichson, Consp. Faun. Peru., p. 68.

The following is all the description Erichson thought proper to give of this species, found by Tschudi, probably on the Upper Huallaga in Peru :

“*C. splendida, viridis, elytris lateribus cupreis, maculisque tribus lateralibus albis.* Long. 7 lin.”

Baron Chaudoir, in the description of his *O. Vuillefroyi*, incidentally states that Erichson's species is of a fine blue colour changing to violet, and that the description applied to the ♀.

In none of Mr. Buckley's specimens are the elytra green, or blue-violet with coppery margins.

O. VUILLEFROYI.

Chaudoir, Rev. and Mag. Zool., Jan., 1869, p. 2.

Described from a ♀ example, 15 millimètres long, received from “Quito.” The colour is “d'un vert olivâtre plus tendre,” *i. e.*, more delicate than the brilliant blue of Erichson's species. This colour agrees with that of several specimens (♀) taken by Mr. Buckley, and which I describe further on as *O. floridula*. Unfortunately, Baron Chaudoir's description is a comparative one, drawn up with regard to *O. prodiga*; he is comparing it, therefore, with a species which cannot possibly be known to those who have not the type before them. He states, however, that the elytra of his insect are entirely covered with a very fine punctuation, and that the middle lateral spot curves crescent-like on the disc towards the base. In these features it differs entirely from *O. floridula*.

O. DENTIPENNIS.

Germer, Guérin's Magaz. de Zool., 1843, pl. 124.

A small species, only four lines long, from South Brazil, differing from all the Andean species by the elytra being truncated at the apex, with a long exterior spine (♀?).

This species is that most generally figured as illustrating the genus *Oxygonia*: thus giving quite an erroneous idea of the typical forms of this group.

O. ALBITÆNIA.

Bates, Trans. Ent. Soc., 1871, p. 377.

A male, from Mr. Chesterton's collection; New Granada; differing from *O. Schænherrii* by the broad whitish marginal stripe of the elytra, which absorbs the humeral and apical spot but not the middle one which projects from the border. The tooth of the labrum is very broad and very obtuse; the labrum is black with two pale spots. The elytra are singly produced and acute at the tips as, in *O. Schænherrii*.

O. CYANOPIS.

Bates, Trans. Ent. Soc., 1871, p. 377.

♀. Bright blue with violet reflections. Differs from all Mr. Buckley's blue *Oxygoniæ* (all of which are ♀) in the absence of the anterior lateral spot. It is, besides, smaller and narrower, and has two long spines at the apices of the four posterior femora, which none of those specimens possess. The elytra are uniformly but rather sparsely and finely punctured, without densely punctured or smooth patches. The labrum is black with two pale spots, and the central tooth is well developed. I doubt whether it can be the ♀ of *O. Schænherrii* or *O. albitænia*.

New Granada.

OXYGONIA GLORIOLA, sp. n.

♂. *Suprà rubro-cuprea, splendida, capitis vertice obscure viridi, elytris vitta lata suturali pone medium dilatata, longe ante apicem terminanti, viridicænea; labro nigro, maculis duabus magnis pallidis, medio valde unidentato; capite inter oculos posticeque crebre strigoso; thorace suprà omnino acute sub-grosse transversim striato, lateribus paululum rotundatis, disco utrinque minime convexo; elytris ad apicem sicuti oblique truncatis, subito depresso-explanatis, angulo suturali producto, acutissimo, suprà ad basin juxta suturam gibbosis, deinde impressis, punctatis, punctis plagiatis densioribus plagisque duabus lævissimis, una discoidali pone medium, altera ante apicem; maculis tribus marginalibus quartaque parva sub humero albis; corpore subtus splendide sub-viridi-aureo; pedibus nigris, femoribus viridicæneis; palpis flavis, articulo ultimo nigro.* Long. 7 lin. Long. elytr. $4\frac{1}{2}$ lin.

♀. *Suprà cyanea, prope apicem viridis, splendida, plus minusve violaceo-tincta, vel violacea, viridi-tincta; capite thoraceque ut in ♂, at labro omnino nigro; elytris ad apicem late obtuse rotundatis, prope suturam leviter sinuatis, ad angulum suturalem fortiter spinosis, suprà ut in ♂ (sed macula sub-humeralis abest), apice subito depresso-explanatis; corpore subtus femoribusque æneo-viridibus; palpis flavis, articulis duobus ultimis nigris; antennarum articulo basali tantum metallico.* Long. 7 lin.

Many examples of both sexes. The head in the ♀ is decidedly broader behind the eyes than in the ♂. In all examples the elytral spots are rather large, broad and conspicuous, the middle spot is slightly transverse, but not linear; the spot under the humeral callus in the ♂ (absent in the ♀) appears a frequent sexual character in this genus.

OXYGONIA FLORIDULA, sp. n.

♂. *O. gloriolæ eodem sexû gracilior, capite angustiori, colore obscuriori; capite viridi, vertice purpureo, labro nigro maculis duabus pallidis; palpis pallidis, maxillaribus articulis duobus, labialibus articulo ultimo, nigris; thorace strigoso, disco purpureo, marginibus viridi-aureis; elytris læte subviridi-aureis, vitta lata suturali pone medium valde dilatata nigro-cænea, ut in O. gloriola inæqualibus, apice rotundato, angulo suturali fortiter dentato, subtilius punctatis, punctis ante apicem densioribus, plagis duabus minoribus lævibus, maculis albis tribus conspicuis, quartaque parva sub humero, minori; corpore subtus femoribusque viridi-cæneis, abdomine aurato.* Long. 7 lin.

♀. *O. gloriolæ eodem sexû affinis, differt colore suprâ clare olivacea, nitore sub-opalescenti induta, labro nigro, testaceo-bimaculato; collo multo angustiore, palporum articulo ultimo tantùm nigro, elytrorum macula sub humero haud deficienti; corpore subtus cæneo-splendido, femoribus viridibus.* Long. 7 lin.

I have seen about six examples of each sex. The colour of the palpi is evidently a variable character in this group, and I do not lay much stress upon it, but the totally different shape of the head in both sexes, the colour and the pale humeral spot of the ♀ are important. The punctuation of the elytra is finer than in *O. gloriola*.

OXYGONIA BUCKLEYI, sp. n.

♂. *O. gloriolæ colore simillima, differt elytris conspicue longioribus, labro cupreo splendido; elytris eodem modo sculptis et pictis; corpore subtus cupreo-aureo splendido.* Long. $7\frac{1}{2}$ lin.; elytror. 5 lin.

♀. *O. gloriolæ eodem sexû similis, at longior, viridi-cænea, labro splendide viridi-cæneo, antennarumque articulis 1 et 3—4 ad apicem metallicis.* Long. $7\frac{1}{4}$ lin.

The metallic labrum is constant in both sexes throughout the numerous series of this species that I have examined; but it is quite easy to distinguish it by the form of the body alone; *O. Buckleyi* being much more elongated than in the other two (more conspicuously so in the ♂), and having a broader and more convex neck, which causes the eyes to appear less prominent: there is the same sexual difference as in *O. gloriola* with regard to the humeral spot. The males of *O. Buckleyi* are less glittering in colour than those of *O. gloriola*.

OXYGONIA MORONENSIS, *sp. n.*

♂ ♀. *Fusco-ænea, labro palpisque nigris; thorace cylindrico, lateribus rectis, conspicue transversim strigoso; elytris ♂ ad apicem subito depresso-explanatis, oblique angustatis, angulo suturali longe producto, apice distincte dentato, ♀ sub-obtuse rotundatis, sutura fortiter oblique dentata; supra grossius æqualiter punctatis, plaga discoidali unica pone medium lævi, utrinque maculis marginalibus tribus (quarum prima parva, 2^{nda} transversa, linearis), ♂ macula parva sub humero; corpore subtus fusco-cupreo, femoribus æneis.* Long. $7\frac{1}{2}$ —8 lin. ♂ ♀.

Many examples. R. Upano, Equador (Buckley).

The elytra are not singly produced at the apex in the ♂ (*i. e.*, strongly deliscent at the suture), the apical spines or teeth being contiguous, thus differing from *O. Schænherrii* and *O. albitænia*.

OXYGONIA CARISSIMA, *sp. n.*

♂. *Suprà olivaceo-viridi-ænea, elytris vitta lata laterali crocea, a bascos medio usque ad suturam extensa, pone medium valde dentata, juxta humeros paulo angustata, ornatis; capite rubro-cupreo tincto; labro flavo-testaceo, dente et marginibus fuscis, palpis fuscis ad basin pallidis; thorace lateribus conspicue rotundatis, suprà subtiliter strigoso et alutaceo; elytris minus inæqualibus, apice paululum depresso-explanatis, obtuse rotundatis, ad suturam haud productis sed breviter spinosis, suprà æqualiter fortiter sub-dense punctatis; corpore subtus femoribusque viridi-æneis, pectore medio trochanteribusque rufo-testaceis.* Long. $6\frac{1}{2}$ lin.

Found by Mr. Buckley in the forest in the Macas district; one example.

OXYGONIA ANNULIPES, *sp. n.*

♂. *Suprà viridi-olivacea, obscura, elytris vitta angusta laterali flava humeros ambiens, prope apicem in maculam elongatam dilatata et pone medium fasciolam obliquam albam emittenti, ornatis; capite rubro-cupreo tincto, labro testaceo, marginibus fuscis, dente valde elongato, palpis nigris ad basin pallidis; thorace crebre subtiliter strigoso, disco cupreo; elytris apice paululum depresso-explanatis, obtuse rotundatis, ad suturam haud productis sed breviter spinosis, suprà æqualiter fortiter sub-dense punctatis; corpore subtus viridi-æneo, prothorace trochanteribus, femorumque annulo lato, rufis.* Long. 6 lin.

Macas district. One example (Buckley).

Kentish Town: February, 1872.

NOTES ON SOME CORSICAN INSECTS,

BY THE REV. T. A. MARSHALL, M.A., F.L.S.

(Continued from Vol. vii, p. 250.)

[WITH DESCRIPTIONS OF NEW GENERA AND SPECIES OF *HEMIPTERA*
BY JOHN SCOTT.]

(Concluded from p. 195).

Genus.—*AGALLIASTES*, Fieb.*AGALLIASTES* *ochraceus*, Scott, *sp. n.*

Ochraceous; sometimes slightly dusky and clothed with semi-depressed black hairs.

Head pale brownish-yellow; *antennæ* yellow, first joint, except the apex and second joint at the base, black.

Thorax: *pronotum* and *scutellum* ochraceous or slightly dusky; *elytra* ochraceous or slightly dusky; *membrane* brownish, the large cell, a patch below the apex of the cuneus, and the outer margin of the cells, slightly darker; *cell-nerves* ochraceous, lesser *cell-nerves* orange-red; *sternum* ochraceous; *legs* deep yellow; *thighs*, first pair along the lower margin with four or five minute black spots, from each of which projects a long black hair, second and third pairs each with a single black spot on the lower margin a little before the apex, upper margin of all the pairs at the apex with two black spots; *tibiæ* with black spots and erect, stout, somewhat spinose, black hairs; *tarsi* pale brown, apex of the third joint broadly black.

Abdomen, underneath more or less brown; genital segments dusky ochraceous.

Length, 1—1½ line.

AGALLIASTES *unicolor*, Scott, *sp. n.*

Minute, green; clothed with semi-erect pale hairs; thighs unpunctured.

Head: *crown*, anterior margin, viewed from above, elliptic; *antennæ* brownish, basal joint green; *eyes* dark brown; *rostrum* green, apex black.

Thorax: *pronotum* and *scutellum* green, the latter with a somewhat deep and narrow, triangular depression at the base; *elytra* green; *membrane* fuscous-black, between the apex of the cuneus and the inner nerve a white triangular patch; *cell-nerves* pale; *sternum* green; *legs* green; *tibiæ* unpunctured, and with long, erect, spinose, black hairs; *tarsi* pale brown, apex of the third joint blackish.

Abdomen, underneath green.

Length, $\frac{7}{8}$ line.

This is the only *green* species of the genus with which I am acquainted. The insects are not in good condition, and, besides, have faded much in colour.

Family SALDIDÆ.

Genus *SALDA*, Fab.*SALDA* *venustula*, Scott, *sp. n.*

Black, somewhat sparingly clothed with erect, fine black hairs.

Antennæ : 3rd and 4th joints very thick, the latter with an oval, white patch on the inside. *Pronotum* and *scutellum* shining, somewhat metallic. *Corium* at the base with a triangular, whitish-yellow spot; and at the apex with a large, almost round, white spot. *Legs* yellow.

Head clothed with short, fine, golden hairs; *antennæ* black, first joint orange-brown, apical third white, second clear brown, base very narrowly and apical third black, third and fourth black, the latter with an oval, white patch on the inside; *eyes* black, shining; *rostrum* brown, apex black.

Thorax : *pronotum* black, shining, with a bronzy or metallic lustre, sides concave, disc with a deep transverse channel nearly in the middle, anterior portion convex, and with a small fovea in the centre, posterior angles slightly thickened and raised; *scutellum* convex, black, shining, with a bronzy or metallic lustre, the basal depression somewhat semi-circular and finely punctured; *elytra* velvety-black; *clavus* clothed with extremely short, deep, golden hairs; near the base, a small, almost round, orange-yellow spot, and another in a line with the scutellar angle; *corium* pale fuscous-yellow, with a slightly darker transverse band not reaching to the anterior margin, its upper edge in a line with the apex of the scutellum; extreme edge of the anterior margin and central nerve black, interior margin broadly black; beyond the middle a large comma-shaped, velvety-black patch, extending to the anterior margin, near the centre of which is a small, orange-yellow spot; next the apex, a large, almost round, white spot, and at the base, a triangular, whitish-yellow one; posterior margin narrowly fuscous; *membrane* yellow, interior margin and nerves black, base and exterior margin of the nerves bordered with fuscous-black; before the apex an almost oval white spot; *sternum* black; *legs* clear brown; *coxae* and basal half of the thighs, white; *tibiae* pale brown, apex narrowly black, with a few semi-erect, long, black, stout hairs; *tarsi* pale brown, third joint at the apex black.

Abdomen black.

Length $1\frac{1}{4}$ line.

This handsome species belongs to the *elegantula* and *Flori* section of the genus. Its prominent, distinctive characters are the oval, white patch on the antennæ, the large white spot at the apex of the corium, and the large, comma-shaped, black patch above the latter, extending to the anterior margin.

The description has been made from a single example.

Family.—NOTONECTIDÆ.

Genus.—ANTIPALOCORIS,* Scott, *g. n.*

Somewhat linear, fusiform.

Head : crown narrow, not produced in front as in *Anisops*; *antennæ* four-jointed, first joint short, second large, somewhat oval, flattened on the sides, third minute, fourth elongate, as long as the second and third together, narrow, somewhat lunate; *eyes* very large, curved with the head, viewed from above

* *Antipalos*, a rival; *koris*, a bug.

somewhat rhomboidal, with rounded angles, touching each other at the inner basal angle, from the side triangular, upper and under margin convex, apex rounded, posterior margin ξ -shaped; *rostrum* stout, four-jointed, reaching to between the first pair of *coxæ*, first joint covered by the triangular labrum.

Thorax: *pronotum* short, posterior margin slightly concave across the scutellum; *scutellum* long, triangular, pointed, sides concave; *elytra* convex, without a clavus or membrane; *embolium* narrow, nearly as long as the corium; *wings*, none; *sternum* long, sides densely clothed with fine, long, appressed hairs; *prosternum* short; *meso-sternum* transverso, anterior margin in the middle with a callus, sides reflexed, xyphus rounded, apex considerably depressed; *meta-sternum* long, posterior margin in the middle triangular; *legs*, first and second pairs short, third very long; *tibiæ*, first pair at the apex with two short spines, lower margin with a few long, semi-erect, stout, spinose hairs; *tarsi*, first and second pairs with the first joint twice as long as the second; *claws*, two, on the first and second pairs sub-equal, on the third minute; *thighs*, *tibiæ*, and *tarsi* of the third pair of legs of almost equal length.

Very closely allied to the genus *Anisops*, from which it differs in not having the crown elongated nor the eyes separate, and in the not decidedly different proportions of the various parts of the hind legs.

ANTIPALOCORIS MARSHALLI, Scott, *sp. n.*

Very pale green, shining, after death almost white; *elytra* with anterior margin black.

Head: *crown* and *face* brown or green, below the base of the forehead an almost round depression extending to the inner margin of the eyes; *antennæ* pale green, second joint clothed with long brownish hairs, fourth joint clothed with short silvery ones, having besides a long fringe of the same along the convex margin; *eyes* large, dark brown; *labrum* piceous; *rostrum*, third and fourth joints black.

Thorax: *pronotum* short, shining, unpunctured; *scutellum* long, triangular; *elytra* pale green, almost white; *corium*, next the embolium with an elongate black streak at the base and another in the middle, connected by the black nerve, apex with a black patch; *embolium*, for about two-thirds the length of the corium, black; anterior marginal nerve more or less green; *sternum* yellowish or greenish, sides thickly covered with very long, fine, black hairs; *legs* green; *coxæ* of all the pairs brownish-yellow; *thighs*, first and second pairs pitchy-black, apex broadly green; *tibiæ* and *tarsi* green; *claws* black; third pair of thighs green, extreme base and apex on the inside piceous; *tibiæ* green, inner margin broadly black; *tarsi* green, inner margin black and with a dense fringe of short black hairs.

Abdomen, above green, genital segments brown; underneath green, base and genital segments fuscous or black.

Length, $2-2\frac{1}{2}$ lines. Length of hinder legs, $3-3\frac{1}{2}$ lines.

Several specimens were taken at the mouth of the Gravone river, in company with *Anisops niveus*.

Linares, Provincia de Jaen, Spain: December, 1871.

DESCRIPTION OF A NEW SPECIES OF *SERICORIS* FROM BRITAIN.

BY C. G. BARRETT.

SERICORIS DOUBLEDAYANA, *sp. n.*

Top of head and antennæ brown, face and palpi drab. Fore-wings short and broad, with rounded costa and truncate hind-margin, glossy, pale grey with a reddish tinge, markings rich chocolate-brown or umbre-colored. Basal patch distinct, its outer edge oblique from near the base of the costa to the sub-costal vein, thence nearly perpendicular to the dorsal margin. Central fascia entire, its inner margin parallel with the outer edge of the basal patch (the contained pale fascia being therefore of *equal* breadth throughout, and also divided by a delicate brown line): the outer margin of the central fascia forms two pointed projections or teeth, both of which point obliquely upwards. On the dorsal margin of the wing, near the anal angle, is an upright, conical spot, and the apical portion of the wing is of the same dark colour, cut up into spots by delicate, pale lines proceeding from the usual costal geminations. Hind-wings pale grey, paler towards the base.

Female fully as large as the male, pale *silvery*-grey, with the markings rich dark brown, and the hind-wings dark grey.

Apparently only variable to a slight extent in colour, the markings exceedingly constant and well-defined.

Allied to *cespitana*, but distinguished from it by the form of the wings, which are short and truncate; while in that species they are narrow, with a straighter costa and slightly produced tip. In *cespitana* also, as in *conchana*, *micana*, &c., the female is much smaller than the male, and, in the best marked specimens of this most variable species, the markings never seem so sharply defined as in *Doubledayana*, nor is the pale fascia, before the middle, so narrow nor so regular in form.

Habitat, Ranworth fen, in July. Probably also Wicken and other fens.

I have taken especial pains to point out the distinctions between this and *cespitana*, because I find that it has been confounded with that species both in this country and on the Continent. Professor Zeller writes "we think this a smaller, livelier var. of *cespitana*;" and Mr. Doubleday tells me that he has it as a variety of the same species. I regret to differ from such eminent authorities; but I have taken this species in some plenty in its fenny haunts, and never found a *cespitana* or anything like it among them; while I have also taken the *dark* forms of the latter species rather commonly at Brandon on the "Buck" sand, and all sorts of queer varieties on the slopes of the Hill of Howth and the limestone of Galway, and am firmly convinced that the two are totally distinct as species.

The history of *Doubledayana* is replete with misapprehensions. I first met with it at the end of July, 1869, when with the Hon. Thos. de Grey at Ranworth Fen, and he recognised it at once as a species which he had taken in the fens of Cambridgeshire, but called it *abscissana*; but as he (now Lord Walsingham) is collecting somewhere on the western slopes of the Rocky mountains, I cannot at present ascertain whether his Cambridgeshire specimens are this species or true *abscissana* (*fuliginea*, Haworth), which is about the same size. Being at that time quite unacquainted with *abscissana*, I put specimens into my collection as that species without hesitation; and, last summer, being able to visit Ranworth occasionally, kept a sharp look out for the species, and, during the month of July, took a good number. Of these I afterwards sent series to various friends under that name; but Mr. Machin noticed the error, and very kindly sent specimens, as also did Mr. Bond, of the true *abscissana* for comparison. That species being whitish, with straight, ill-defined dark fasciæ, bears little resemblance to *Doubledayana*.

It gives me particular pleasure to name this novelty in honour of my kind friend Mr. Doubleday, who has spent so many years in elucidating the history and clearing up the nomenclature of our native *Lepidoptera*.

Norwich: 12th February, 1872.

Note on three new British species of Homalota.—I have recently been able to determine as British the following three species of *Homalota*, not included in the revision of that genus published by me two or three years ago.

1. *H. difficilis*, Bris.—Near *H. vilis*, but smaller, with shorter thorax, and paler antennæ. Taken by Mr. Crotch and also by Mr. Champion (I have no locality from either).
2. *H. humeralis*, Kr.—Very near *H. sodalis*, but smaller, with paler elytra and antennæ, and different ♂ characters. Taken by Prof. McNab, at Cirencester.
3. *H. finorum*, Bris.—Very near *H. cinnamoptera*, but smaller, darker, rather more sparingly punctured, and with shorter antennæ. Taken by Mr. Crotch (I think, in Norfolk).

—D. SHARP, Eccles, Thornhill, Dumfries, February, 1872.

Note on the occurrence near London of Homalota atrata, a species new to the British list.—I have recently taken, in a marshy place near Lee, five examples of a *Homalota* unknown to me, and which Dr. Sharp has determined to be *H. atrata*, Mann.; Ktz., Ins. Deutschl., ii, 285 (*clancula*, Er.). It appears to be most nearly allied to *H. gagatina*; and, compared with that species, is rather smaller, shorter and broader, with its abdomen thickly and finely punctured all over the upper surface. Its short and compact form somewhat simulates *Gyrophæna*; and it is not in general *facies* unlike a very small specimen of *Oxyptoda lentula*, with which it occurs.—G. C. CHAMPION, 274, Walworth Road, S.E., February, 1872.

Note on the occurrence in Great Britain of Melœ cyaneus, Muls.—I possess a ♀ specimen of a *Melœ*, recently given to me by the Rev. R. P. Murray (who took it last year in the Isle of Man), and which I think must be referred to the *M. cyaneus* of Mulsant (Col. de France, Vésicants, p. 47);—with European specimens of which in the British Museum collection it agrees tolerably well in all essential points. From Mulsant's description, *M. cyaneus* is usually smaller than *M. proscarabæus*, with a purplish-violet metallic head and thorax, the punctures of which are not so coarse, the base of the thorax feebly emarginate at most, a more or less evident longitudinal depression on the thoracic medial line behind the middle, and less rugose elytra. The thorax itself, according to Mulsant, "*semble un peu plus long que large*;" but in this Manx specimen it is decidedly quadrate: otherwise, the insect accords well with the description of *cyaneus*; and its brightly metallic (in some lights slightly coppery) and remotely punctured head and thorax, and the broad and very evident basal longitudinal channel of the latter segment, give it quite a different facies from the bluest specimens of *proscarabæus*.

From *M. violaceus*, its decidedly shorter thorax (of which the base is not nearly so deeply emarginate, and has no transverse channel), black elytra and body, and more metallic head and thorax, at once distinguish it.

There seems some slight doubt as to *M. cyaneus* being held as thoroughly distinct from *proscarabæus*: but, however that may be, this Manx insect, which is apparently an extreme of the former, is certainly not to be reconciled with any *proscarabæus*; and its structure prevents its being confused with any other of our species.—E. C. RYE, 10, Lower Park Field, Putney, S.W.: *February*, 1872.

Note on the capture of Nitidula flexuosa.—As I believe this species is to some extent looked upon as doubtfully indigenous, I may note that I beat it in the spring of 1871 out of some rams' horns, collected from the butchers here during the preceding summer, and laid in a yard near a bone mill. These horns still remained *in statu quo* the last time I was at this place, and I again found the beetle.—ROBERT LAWSON, 58, St. Thomas Street, Scarborough: *January*, 1872.

Note of recent capture of Platydema violacea, Fab.—Looking over some coleopterous odds-and-ends belonging to my friend Mr. James Allen, I found, amongst some New Forest captures, two specimens of this somewhat scarce insect, taken last July, from a decayed bough of oak. The late Charles Turner, I believe, found several of this species in a similar situation.

Through the kindness of the captor, one of the specimens now serves to fill a gap left in my collection for that species.—JOHN GEO. MARSH, The Sycamores, 842, Old Kent Road, S.E., *February*, 1872.

Natural History of Leucania straminea.—After waiting many years, I have at length had the satisfaction of figuring the larvæ of this species, and breeding the moths; and now have the pleasure of offering some account of the larva, and returning my thanks to the three friends who have helped me, viz., to Mr. Howard Vaughan, for the first examples, June 21st, and July 5th, 1870, and again in June, 1871; secondly to Mr. Charles G. Barrett, for larvæ in April and May; and thirdly to Mr. Henry Laver, in June, 1871.

The chief food of the larva consists of the leaves of *Arundo phragmites*, though

it will eat, and is sometimes found on, *Phalaris arundinacea*, as well as on other coarse grasses growing amongst reeds in wet places; it remains on its food-plant and hides itself by day under and amongst the mingled leaves, and comes forth at night to feed; from the structure of the abdominal legs, and their terminal discs, it is enabled to obtain a firm footing on the smooth surfaces of the reed stems and leaves, without any danger of being blown off, or falling into the water over which it must be often moving.

The habits of the rest of the genus lead me to suppose that the larva is hatched in autumn, and hibernates whilst yet small; I have had individuals no more than half-an-inch long sent me at various dates from the end of April to the beginning of June, the growth of the reeds probably influencing the rate of their development, but I found that, when once they had begun to feed, they took about five weeks to attain full growth; ichneumonid larvæ lingered on longer, up to the time of the appearance of the first specimens of the imago.

The larva in its immature state, when half-an-inch long, is very slender, of a dull greyish-brown colour, with an almost blackish dorsal line, and several faint lines along the sides, by the arrangement of which one identifies it readily enough as a true *Leucania*; afterwards, at each moult, it becomes a little paler and brighter coloured, its pattern of longitudinal lines and stripes remaining relatively the same.

When full-grown it measures $1\frac{1}{2}$ to $1\frac{3}{4}$ inches in length, slender and tapering a little at each end, especially towards the head, which is the smallest segment; it is tolerably cylindrical, the abdominal legs are rather long and well developed, the extremity of each furnished with a circlet of sharp hooks, the anal pair being usually extended behind in the line of the body, and the others often appearing a little sprawling according to the exigence of position; the head is slightly flattened above, and the antennal papillæ are well developed, projecting forwards in line with the head and body; the skin is remarkably smooth, the segmental divisions being scarcely indicated, chiefly in fact, by fine wrinkles forming themselves when the larva bends itself round, in the graceful postures it assumes, when actively engaged in feeding.

The ground colour of the back and sides is brownish-ochreous, but, with the exception of a stripe on either side the back, and another again lower down, this is thickly covered with minute, wavy, linear, greyish freckles; the dorsal line is of dark grey, sometimes blackish grey, having a fine central pale thread; the sub-dorsal line is similar to the dorsal, but rather paler, both in the central thread and in its lines of grey edging; the second stripe of the ground colour follows; then another pale line with dark edges, precisely similar to the sub-dorsal, though rather pale ochreous in tint; below this comes a broad stripe of the freckled ground colour, marked the strongest along its upper and lower edges, and so little freckled along its middle region as sometimes to give a line of the plain ground colour there; the spiracles are along the lower freckled edge, they are whitish-grey, faintly outlined with black; the sub-spiracular stripe is pale ochreous and paler still at its edges, the belly and legs being of the same colour but a trifle deeper in tint; the tips of the ventral legs are dark brown; the head is brownish-ochreous, brown at the mouth and shining, as is also the upper surface of the second segment. I have distinguished all these markings as well as I could, but in truth, the whole surface

is so much of the same depth and colouring, especially on the back and sides, as to produce a very soft uniform appearance; even the tubercular dots appear wanting, though really they are present, and even black in colour, but then they are so minute as not to be noticed without a lens.

When full-fed, the larva bends down a leaf of the reed, or fastens two or more leaves together, and there spins a slight and rather open worked cocoon of greyish silk, the upper surface flattened, within which it changes to a pupa. The perfect insects appeared between the 7th of July and 9th of August.

To give some notion of the extent to which this species suffers from parasites, chiefly small ichneumons, though sometimes dipterous, I may mention, that of twenty specimens sent me by Mr. Vaughan not one had escaped being stung; and from those he retained for himself, he succeeded in rearing but one moth.—WM. BUCKLER, Emsworth, November, 1871.

Captures of Lepidoptera near Lewes.—March 22nd, *T. rubricosa* on sallows. *X. lithorhiza* commonly, flying after dark.—24th, *H. croceago*, 2 or 3 on sallows.—28th, *T. miniosa*, 1 on sallow.—30th, *H. croceago* and *T. miniosa*, 1 or 2 of each. *T. piniperda* (2) on sallows.

April 4th, *T. miniosa* on sallows rather commonly; also 1 or 2 *H. croceago*. Took a ♂ *T. stabilis* in cop. with ♀ *T. gothica*. I obtained ova and reared the larvæ, which are now in the pupa state.—12th, *L. polycommata*, one, on a hedge.

May 6th, *S. dubitata* and *E. alchemillata* at dusk.

June 2nd, *L. sinapis* (2). *M. Athalia* commonly. *C. plantaginis*. *S. extersaria* several. *M. notata* (1). *Aspilates strigilaria* (2). *M. hastata* commonly. *E. fuscula*, *E. octomaculalis*, *R. arcuana*, *Adela DeGeerella*, &c.—June 15th, *P. Geryon* several. *P. globularie* scarce. *Pterophorus tetradactylus*.—28th, *A. tincta* one at sugar.—29th, *C. porcellus* one bred.

July 6th, *H. derivalis* at dusk. *A. ligustri* at sugar.—14th, *C. ligniperda*, ♀, flying round sugar. *T. fimbria* several bred.—17th, *Eubolia lineolata*, one. *D. galli* one, bred by a friend from a larva found last year.—20th, *N. camelina* at dusk. *A. ligustri* on sugar.

August 8th, *B. glandifera* at rest.—16th, *G. obscurata* commonly. *C. Edusa*, 2 seen.

September 11th, *A. australis* (1) very scarce this year.—14th, *S. convolvuli*, a battered specimen brought.

October 3rd, *P. empyrea* on sugar and ivy-bloom. *A. saucia* one.—28th, *Cerastis erythrocephala* one at sugar. *H. croceago* one on sugar. *A. pyramidea* and *Hadena protea* still in good condition: surely very late?

November 2nd, *H. croceago*; *C. miata*, and *X. rhizolitha* at sugar. *A. aprilina* in good condition, and very abundant.

December 13th, *Plusia gamma*, a specimen brought.—J. H. A. JENNER, Lewes, January 13th, 1872.

Notes on species of Tineina feeding upon Fungi.—It is never possible to say what piece of good luck one may meet with by going a little farther. I thought that I had made the acquaintance of every species of moth that was in the habit of frequenting a large chalk pit which has been a favourite collecting ground of mine for the last three seasons; but, one afternoon last July, I happened to walk over to a

large oak tree in a field not a hundred yards from the pit, and there found several *Tinea misella* running on the trunk before their evening's flight. Their home was evidently in some cavity in the trunk opening between the large main roots, and very hard it was to secure the swift-footed little moths before they could make their escape into it. Doubtless, some fungus was growing in the cavity which served them for food; and there was evidently no scarcity, for the moths were to be found about the tree for the next fortnight.

Among them were several specimens (chiefly males) of a yellowish colour (a sort of Albino form to which several species of *Tinea* seem liable, notably *rusticella* and *ferruginella*); and, taking this into account, it will easily be believed that I had some difficulty in realizing that this was the same species that I had last seen ten years before in the spirit vaults at Dublin, on the wonderful "blankets" of fungus with which their walls are lined.

Another old Dublin acquaintance turned up in August,—a specimen of *Oinophila v-flava*, running among some papers in a public-house. On examining the vaults of the brewer to whom the house belonged, I found dead specimens in the spiders' webs, but not in any numbers. A woody fungus growing in one of the vaults produced only *Tinea fuscipunctella*.—CHAS. G. BARRETT, Norwich, 16th January, 1872.

Notes on Mimicry.—The subject of mimetic resemblances is one of so much importance, that a few words from an entomologist who knows little of it, except as it is seen in Great Britain, may yet prove of some interest.

As far as insects are concerned, mimicry must be considered under two distinct heads; mimicry in the imago, and mimicry in the antecedent states.

Mimicry in the imago again naturally divides itself into three classes, namely:

1. The simple imitation of inanimate objects.
2. The imitation of objects dependent on animal life.
3. The imitation of living beings.

Examples of the first class abound amongst our *Lepidoptera* especially,—from the simple white *Acidalia* on the chalk cliffs, to the *Noctua* with its shut wings closely resembling the grey stone or tree trunk on which it sits. Of course the *Mantidæ* of the tropics show this more perfectly; yet the protective reason for the existence of this group is proved as clearly by innumerable British species.

The second group is best separated from the first, because it is reasonable to suppose that they did not exist until after the birth of the animals on whose existence their mimicry depends. For example, no entomologist could deny the close resemblance between *Cilix spinula*, *Abraxas ulmata*, or *Eudryas grata* and the excrement of a bird; it seems a just inference that these species were not called into life until after small, flying, and probably insectivorous birds already existed.

The third class is perhaps of the highest interest of all; here we find one insect under some peculiar protection, and others imitating its form, though not possessing its endowments. The *Heliconiæ* and *Danaides* of warmer countries are in England represented by bees and wasps, whose stings give protection to themselves, and indirectly, through mimicry, to other insects also. It would be curious to reckon up how many insects in England mimic the wasps and their allies, sometimes, as in the indolent *Trochilia*, the protection seems needful enough; at other

times, as in the clear-winged *Macroglossæ* and the active *Syrphidæ*, it seems to us superfluous: again, it is present in some parasites, as the *Vollucellæ*, whereas in others, as in the *Myopæ*, the *Nomadæ*, and the gaily coloured *Chrysidæ*, it is completely absent. These "negative instances" are certainly subjects for thought.

Examples of repetition, as they may be termed, are not rare: these are only pseudo-mimetic; they are, however, worthy of a passing notice. They exist in insects widely differing from each other, or in closely allied species; as illustrations where the insects are clearly not related, the genera *Crambus* and *Pleurota* may be taken, the resemblance of such moths as *Pleurota Schlägeriella* and *Pleurota aristella* to species of the genus *Crambus* is certainly remarkable. It is a curious coincidence, that all the three European butterflies which haunt the oak, namely, *Thecla quercus*, *Aurotis roboris*, and *Apatura Iris*, should have the same colouring, or nearly so; but the strangest example of repetition that ever fell under my notice is a small *Gelechia* (from Texas, I believe), shewn to me by Mr Stainton, which has the markings and colours of *Noctua c-nigrum*. Repetition in very closely allied species is perhaps not so wonderful; and yet, when thought of in all its aspects, the co-existence of such species as *Vanessa polychloros* and *V. xanthomelas*, *Pamphila Thaumata* and *P. lineola*, *Harpella Geoffroyella* and *H. Staintonella*, *Dasycera Olivella*, *intermediella*, and *imitatrix*, is indeed more than passing strange.

It certainly does not render the subject of mimicry more easy, when it is remembered that the same protective influence is given to antecedent states of the insect.

The mimetic resemblances of larvæ may be divided exactly as those of the imago: we have the imitation of inanimate objects shown by the simple green caterpillars resembling the leaves on which they feed, but far more markedly in the close copy which some larvæ present of twigs or stems: none show this better than the larvæ of *Ourapteryx sambucaria* and *Rumia crategata*.

Of the second class, I only know one native larva,* which has ever created such a disgust in my mind by its soft, shiny excrementitious look, that, to my shame be it spoken, it has never been reared by me. It belongs to the *Tenthredinidæ*, and lives on hawthorn, and is not rare in autumn feeding in a slovenly manner on the epidermis of the leaf, living exposed on the upper surface; it is a grey-brown larva, with the first few segments as it were swollen, and, as before said, closely resembling the soft excrement of some birds.

Of the third group, the larva of *Allantus scrophulariæ* is a good example: the resemblance between its colour and that of the larva of *Cucullia verbasci* is most striking, and when found, as they often are, upon the same plant, cannot fail to impress itself at once on the person who sees them; curiously enough, both larvæ have the power of ejecting a most disagreeable yellowish-green saliva from their mouths, so that it is difficult to say which is the protector, and which the protected mimic.

Repetition exists among larvæ as in perfect insects without mimicry; a very good illustration is again given by a Tenthredinous larva found not rarely on the alder: it is onisciform, and I have known it more than once mistaken by naturalists for the larva of a *Thecla* or *Lycæna*.

Artificial mimicry is frequent amongst larvæ: in these, a case or covering is formed by themselves for their protection, this case resembling other objects around them: thus the cases of many *Coleophoræ* resemble the seeds of the plants

* *Blennocampa æthiops*, Fab., according to Hartig.—Eds.

on which they feed; other examples are given in the *Psychidæ* and in the *Phryganidæ*, these two last being instances of repetition also. Some *Geometræ*, as *Phorodesma bajularia* and *P. smaragularia* have this same protective instinct.

Mimicry confined to one sex is rare in British insects,—the female *Pezomachi*, perhaps, giving an example of this; mere repetition in the female only, occurs in *Lycæna Corydon* and *Lycæna Adonis*.

This slight sketch of mimetic instances is intended to direct attention to the subject, in the hope that some entomologist may give a more complete essay on it.

Before concluding this notice, I would just add, that mimicry is not confined to insects,—the colouring of beasts, birds, and especially of reptiles, all illustrate it: again, the genus *Heliconia* itself is not better imitated than is the autumnal crocus (*Crocus nudiflorus*) by the poisonous *Colchicum autumnale*; nay, we even find excellent examples of mimicry in inanimate things, such as many isomorphous salts: for example, the harmless tribasic phosphates and the poisonous arseniates. All these considerations make the subject a most difficult one, yet, perhaps, on that very account more worthy of study.—R. C. R. JORDAN, 35, Harborne Road, Birmingham: February, 1872.

Anagrams and Nonsense-names in scientific nomenclature.—In the recently-issued Record of Zoological Literature for 1870 (to which I hope all the readers of this Magazine are or will become Subscribers, for Entomology obtains the lion's share of the volume), I find at p. 269 the following:—"Rhyxabis [qu. Ryrabis, anagram of Bryaxis?], Westw., Tr. E. Soc. 1870, p. 131." On reference to the "Tr. E. Soc." it will be found that the name is there given as *Ryxabis*, not *Rhyxabis*.^{*} But if my learned friend the Recorder is wrong in his citation, he is right in his conjecture.

Doubtless, *Ryxabis* is an anagram of *Bryaxis*, just as the preceding genera *Sintectes* and *Phalepsus* are anagrams of *Ctenistes* and *Pselaphus*. Apropos of this *Plinus-Tipnus-Niptus-Nitpus*-ism, I quote the following from the Rules for Zoological Nomenclature approved by the British Association in 1842.

"Nonsense names.—Some authors, having found difficulty in selecting generic names which have not been used before, have adopted the plan of coining words at random, without any derivation or meaning whatever. The following are examples: *Viralva*, *Xema*, *Azeca*, *Assiminia*, *Quedius*, *Spisula*. To the same class we may refer anagrams of other generic names, as *Dacelo* and *Cedola* of *Alcedo*, *Zaporna* of *Porzana*, &c. Such verbal trifling as this is in very bad taste, and is especially calculated to bring the science into contempt. It finds no precedent in the Augustan age of Latin, but can be compared only to the puerile quibblings of the middle ages. It is contrary to the genius of all languages, which appear never to produce new words by spontaneous generation, but always to derive them from some other source, however distant or obscure. And it is peculiarly annoying to the etymologist, who, after seeking in vain through the vast storehouses of human language for the parentage of such words, discovers at last that he has been pursuing an *ignis fatuus*."

^{*} *Mea maxima culpa!* My pen, I suppose, was so accustomed to the more correct *Rhynchites*, *Rhinomacer*, *Rhizophagus*, *Rhipi(do)phorus*, &c., that it led me into this error. I may here notice another grievous mistake, lately pointed out to me, in my portion of the "Zoological Record": I have, among my very numerous quotations of Thomson's name, wrongfully, on one occasion, allowed the printer to caricature that learned Swede by the name of "Thompson,"—with a "p."—E. C. R.

Amongst the signatures appended to these Rules and Recommendations, the last, but not the least honoured, is "J. O. WESTWOOD."

Whilst on the subject of nonsense-names, may I enquire what specific malady has attacked our nomenclators? In glancing cursorily for a few moments over the aforesaid Zool. Record, I have fallen upon a *Pleocomma staff*, a *Hesperia powesheik*, and a *Noctua hatney*! When *Amphionycha Knownothing* was wisely abandoned by its author, I did hope that the day had gone by when a *Pleocomma staff* would have been possible.—J. W. DUNNING, 24, Old Buildings, Lincoln's Inn, *January, 1872.*

Upon the relations between generic and specific names.—In Mr. Dunning's remarks on the recently published Catalogue of British Aculeate Hymenoptera there is a point incidentally alluded to, on which I would like to say a word or two. It is, the necessary agreement in gender of specific and generic name when applied to the same object. Of course, there can be no question but that, when a naturalist names a species for the first time, he should make the specific name accord in gender with the generic name. But the question whether, when a masculine specific name is changed from a masculine-named to a feminine-named genus, it should be accordingly *altered to suit* the generic name, is quite a different thing. After a careful consideration of this point, I have no hesitation in giving my support to Staudinger's conclusion, viz., that the specific name should *not* be so changed in gender. I will briefly give my reasons for this.

The name of the species is the real basis of zoological nomenclature, and every effort should be made to get naturalists clearly to understand this. The natural course of nomenclature is this—a name is given to a species, and this name is, from the fact of its being applied to an object, a noun: it matters not that a word which is ordinarily an adjective (such as *niger*) be adopted for the purpose, the main point to be borne in mind is that, when used as a specific name, it indicates a certain definite object, and, from that very fact, is, in accordance with the rules of grammar, a noun.

The generic noun is a mere secondary affair,—a concession to human weakness; and it is a mistake to suppose that the fundamentally more important specific noun should be changeable to suit the generic noun,—this latter being really much more adjectival than the specific noun.

Mr. Dunning thinks *Lycæna Minimus* abhorrent; but I think it can be only because of some curious classical prejudices that he so considers it. Science-nomenclature should be of no particular language, its object being to supply a universal language, and it is to be of assistance for this purpose that we make use of Latin and Greek words (as being more generally known than others); but we must handle them according to the rules of universal grammar. Now, the two words "*Lycæna Minimus*" are analogous to the two words "Yew tree" (or rather "tree yew") in ordinary language. "Yew" and "tree" may be of different genders, and yet the combination be perfectly correct; so I maintain that *Lycæna* and *Minimus* in combination are perfectly correct. The comparison of *Lycæna Minimus* to "Pauline Frederic" is quite deceptive; one of the *chief objects* of the use of the word "Pauline," as applied to an individual, is to indicate its sex; and it is, therefore, of course ridiculous to conjoin with it another name contradicting it on that point. There is no meaning in "no-yes," unless as a fresh word signifying something different to either yes or no; and similarly objection is to be taken to

Pauline Frederic. But the generic name and the specific name of an object are two distinct nouns, the specific noun representing the specific qualities, the generic noun the generic qualities. Nobody objects to a masculine generic name being used in a family of which the name has a feminine termination; and I cannot see that there is any greater barbarism in *Lycæna*, *Minimus*, than in *Staphylinidæ*, *Staphylinus*.—D. SHARP, Eccles, Thornhill, Dumfries: *February*, 1872.

Obituary.

James Charles Dale, M.A., F.L.S. "On the 6th (February) inst., at Glanville's Wootton, JAMES CHARLES DALE, aged 80." So ran the obituary notice in the daily papers. To us, the significance of these few words is that the oldest, or nearly the oldest, British entomologist has passed away; not one who in his early years followed entomological pursuits and afterwards abandoned them, but a consistent student of Nature from his youth till his death, for letters received but a few months since proved that Mr. Dale at 80 was as enthusiastic an entomologist as he was known to be in his youth. Though latterly complaining that stiffness of the joints rendered the capture and setting of insects not so easy as it used to be, still we had no reason to expect news of his decease. To us, comparative beginners in entomology, his letters and conversation excited considerable wonderment. He was wont to talk of captures made 40 years since as of events of yesterday: to the veteran entomologist time seemed of no account. We well remember only a few years since the manner in which he related, with a perfectly boyish delight, how he had got the better of our chief Natural History Society. He became a Fellow in 1818, and compounded for his Annual Subscription; and, as this composition is based upon the principle of 10 years purchase, he had thus received its equivalent more than five times over. In his company (and he was always ready to press his hospitality upon any entomologist who might be desirous of consulting his collections), one became aware of a mingling of the past with the present to a marvellous degree. Mr. Dale was a 'British' entomologist *par excellence*, and one of the very few who devote themselves to all orders. His collections, the accumulations of his long life, are enormous, and almost every specimen is so labelled, that its exact history, whether it be of yesterday, or fifty years old, was traceable by its possessor in a moment. The notes published by himself are chiefly short, and scattered through the periodicals of nearly half a century. But it is in connection with John Curtis that the name of J. C. Dale will be handed down to generations of entomologists yet unborn. In the 'British Entomology' his name is on almost every page, and it was from *his* collections that Curtis derived a vast portion of the material from which his elaborate work was drawn up. The two worked hand in hand, and their names came to be considered as almost synonyms. Now that Curtis's own collection is unfortunately transported to the Antipodes, the Dalean collection is of special importance, for it enables the student in very many cases to verify Curtisian species that would be otherwise doubtful.

But for Curtis, Mr. Dale's name would probably be scarcely known beyond our own shores, for he seldom entered the arena of scientific controversy. He was emphatically an English country squire, but,—and the instances are tolerably rare—one with a taste for entomology; and of this taste he made no concealment. Only a few years since we heard from his own lips, narrated with considerable

gusto, a story of an event that befel him when he took his magisterial seat as High Sheriff of Dorsetshire. Some wag, fully aware of Mr. Dale's proclivities, let loose a swarm of butterflies in court, and, while this may have in some degree detracted from the dignity of his office, there can be no doubt that no one more heartily enjoyed the joke than did he against whom it was directed.

Mr. Dale took his first degree at Cambridge in 1815, and became M.A. in 1818. Considerably more than half a century of a life spent in entomological pursuits cannot be done justice to in the space at our disposal. We have, at the present time, no means of knowing what may become of Mr. Dale's extensive collections. He married in 1848, and leaves two sons, who possess their father's taste for entomology: it is, therefore, possible that these collections may remain in the family.

ENTOMOLOGICAL SOCIETY OF LONDON. Anniversary, 22nd January, 1872.—A. R. WALLACE, Esq., F.L.S., President, in the Chair.

The Rev. T. A. Marshall, and Messrs. H. W. Bates, A. Müller, and F. Smith were elected into the Council to replace Members retiring therefrom.

Prof. J. O. Westwood was elected President for the ensuing year; Mr. S. Stevens, Treasurer; Messrs. Mc Lachlan and Grut, Secretaries; and Mr. Janson, Librarian.

The outgoing President read an address, for which, and for his services during the past year, a unanimous vote of thanks was tendered. The proceedings terminated with the usual vote of thanks to the other officers of the Society.

5th February, 1872.—Prof. J. O. WESTWOOD, M.A., F.L.S., President, in the Chair.

The President thanked the Society for the honour it had done him in again electing him to fill his present office; and he appointed Messrs. E. Saunders, F. Smith, and H. T. Stainton, as Vice-Presidents.

Mr. Mc Lachlan brought before the meeting an illustration of the manner in which the ravages of Aphides are checked by Hymenopterous parasites. A twig of poplar, placed in his hands by Dr. Knaggs, was occupied by a family of plant-lice, and every individual had been attacked by a parasite (probably an *Aphidius*), so that there remained only the inflated skins, resembling eggs of some large moth, each of which presented a circular hole whence the parasite had emerged.

Mr. Druce exhibited a selection from an extensive collection of butterflies from Costa Rica formed by Dr. Van Patten. The collection included about 50 new species, among which were four of *Papilio*, three of *Morpho*, three or four of *Leptalis*, a new genus of *Satyridæ*, &c., &c.

Prof. Westwood exhibited drawings and specimens of various species of *Acaridæ* new to Britain. Of these the most remarkable was a *Trogulus* (*T. rufitarsis*) received from Dorsetshire, allied to *T. nepiformis* of the south of Europe. Another form pertained to the genus *Argas*, which includes the poisonous *A. persicus*; and this had been found in the crypt of Canterbury cathedral.

Mr. Bond had also obtained specimens of another species found in a church on a gentleman's coat, after two young bats had fallen upon him from the roof.

Major Parry read descriptions of various new species of exotic *Lucanidæ*; and was followed by the reading of further remarks on insects of this family by Prof. Westwood and M. Snellen van Vollenhoven.

DESCRIPTION OF *WESMAËLIA CREMASTA*, A NEW BRACONID FROM GREAT BRITAIN AND SPAIN.

BY THE REV. T. A. MARSHALL, M.A., F.L.S.

Gen. *WESMAËLIA*, Först.

Verh. nat. Ver. d. pr. Rheinland, 1862, p. 235.

First cubital cell separated from the discoidal. Antennæ not clavate. First segment much elongated, linear.

The above are all the characters given by Förster for this genus, belonging to the group of *Euphorus* and *Microctonus* among the *Bracônidae*. It may be immediately recognised by the remarkably *long and slender petiole*, resembling that of *Pelopæus*, but curved. Förster's type, *W. pendula*, is undescribed, and may very likely be the same as the following species. The practice of issuing such names is of course perfectly useless, and should be discontinued.

WESMAËLIA CREMASTA, *sp. n.*

Testacea, mandibulis apice et metathorace, interdum rufis; oculis, ocellis, metathorace postice, terebræque valvulis, nigris; antennis tarsisque, apice fusciscentibus. Long. $1\frac{2}{3}$ lin. ♀.

Head large, wider than the thorax, sub-cubical, buccated; occiput hardly emarginate. Antennæ nearly as long as the body, 26-jointed, slender; the joints cylindrical near the base, becoming moniliform towards the apex. Mesothorax trilobate, gibbous, much higher than the prothorax. Scutellum slightly convex, rounded at the apex, and having a shallow transverse fovea at the base. Metathorax short, descending rather abruptly, excavated behind in the middle, rugulose, without arcolets. Wings hyaline, nervures and stigma testaceous, the latter edged with brown beneath; radial cell lanceolate, larger than in the allied genera, with which the neuration in other respects agrees. First segment of the abdomen not thicker than the hind femora, as long as all the other segments together, linear, regularly curved, very slightly widened at the middle, where the spiracles are situated; segment 2 concealing all after it except the apical. Abdomen small, strongly compressed; viewed from above, linear-ovate, acuminate at both extremities, smooth, shining; viewed laterally, pyriform. Terebra short, curved upwards. Legs elongate, slender. Testaceous, the clypeus yellow, with whitish hairs; the mandibles in one specimen rufous at the apex; eyes, ocelli, and valves of the terebra, black; metathorax in one specimen rufous, black behind and at the lateral edges in both. Base of the petiole paler.

Not to be confounded with *Leiothron apicalis*, Curt., B. E., which it somewhat resembles in colours ; but the radial cell of *L. apicalis* is much smaller, and the petiole not nearly so long.

I have taken two females of this remarkable insect ; one at Bielsa in the Spanish Pyrenees, and the other (to my great surprise) in a wood in North Devonshire. The English specimen is somewhat more highly coloured, having rufous points to the mandibles, and the meta-thorax rufescent.

St. Albans : February, 1872.

NATURAL HISTORY OF *MELITÆA ATHALIA*.

BY W. BUCKLER.

I am indebted to the kindness of that indefatigable collector, Mr. W. H. Harwood, for the opportunity of describing the larva of this species, and also of adding to the list of its food-plants one, which I have never seen mentioned in any work.

On a warm day in last May, Mr. Harwood was sitting under a tree and discussing his lunch, when, in compliance with that curious law, which, as Mr. Stainton long ago made us observe, so intimately connects the entomologist's *al fresco* meals with interesting discoveries in insect œconomy, his attention was arrested by the movement of a dead leaf lying amongst others on the ground before him. Presently the head of a larva was protruded ; a further examination showed that its owner was engaged in eating a small plant of *Melampyrum pratense*, and was but one of a large colony similarly engaged.

In previous years, my friend had captured the imago of *Athalia* in this locality, and had been puzzled, because its generally reputed food-plants, *Plantago major* and *lanceolata*, could not be found there ; but now the secret was told : and, although I have no doubt but that, under varied conditions of locality and climate, the larva feeds on various plants, yet I cannot help thinking that, in many of the English habitats for the species, *M. pratense* must be its food. *Melampyrum sylvaticum* has, I know, been given in the list ; but, as this seems to be a rare plant in Britain, and not to be known in many places where the butterfly occurs, I am inclined to believe that a small variety of *M. pratense* may have been mistaken for it.

To the larvæ, which Mr. Harwood sent me on May 16th, I gave the choice between *Melampyrum pratense* and *Plantago lanceolata*, but found the latter quite neglected by them, even when they had finished up their supply of the former plant. On May 24th, they began to

suspend themselves to the under-sides of the leaves, and to the sides of their glass cage, and on the 27th, they had all assumed the pupa state. The perfect insects, of an unusual depth and richness of colour, and of maximum size, emerged from the 27th to 30th June.

The full-grown larva is about 1 inch in length, and moderately stout; viewed sideways, it is of about uniform bulk throughout, viewed from above, it is seen to taper slightly just towards each extremity: the head is indented on the crown, is widest at the sides near the mouth, and rather flattened in front; the body is thickly covered with obtuse, conical spines, to the number of one hundred and thirteen, as follows: the segments from the fifth to the eleventh, both inclusive, bear each eleven spines, arranged in a single transverse row on the back and sides; or, if they are regarded longitudinally and collectively, then we may say that on segments 5—11 there are eleven row of spines, viz., the dorsal, and, on each side, the sub-dorsal, supra-spiracular, sub-spiracular, lateral, and sub-lateral: the other segments have, as usual, a different arrangement; the second segment bears but two spines on each side, which are in line with the lateral and sub-lateral rows; the third segment has ten spines, the dorsal one only being absent; the fourth segment has eight spines, the lateral as well as the dorsal being absent; the twelfth segment bears ten spines, the single dorsal being here replaced by a pair, *i. e.*, one in front, the other at the hind part of the segment, whilst the lateral pair are absent; the thirteenth segment has but four spines, which stand two on each side, in line with the supra-spiracular row of the rest; of all these spines, those in the two lowest rows are the most slender and smallest, and those in the sub-dorsal are rather the largest.

The ground colour of the back is black, becoming gradually blackish-olive on the sides; the belly olive-brown, the anal flap, and also the segmental divisions, olive; all the skin is thickly covered with whitish spots, that are very slightly raised, with a tessellated appearance, except that a dorsal stripe of the black ground is left; the spots on the back are somewhat transversely oblong, but rather irregular in shape, and are disposed partly in three transverse rows between the spines of one segment and those of the next, and partly round the bases of the spines; on the sides, the spots are rounder and smaller, and are chiefly congregated round the spines and spiracles; there is a lateral series of three large irregular spots on each segment beneath the spiracles, which almost forms a broadish longitudinal stripe. The head is black, with a transverse whitish stripe just above the mouth, and a group of whitish

spots on the crown of each lobe, which, as does the rest of the head, emit fine black bristly hairs; on the front of the second segment is a narrow raised semi-circular plate of greyish flesh-colour, also emitting black bristly hairs: the colour of the spines of the dorsal and sub-dorsal rows is orange-ochreous, growing whitish at the tips and of the dorsal rather pale at the base; those in the supra-spiracular row are of a paler ochreous tint, with more of their tips whitish; the three other rows below the spiracles are all whitish; all the spines are thickly set with straight, short, pointed black bristles at an acute angle, and for the most part each white spot on the body emits a fine, short black hair: the spiracles are black, ringed with whitish; the anterior legs black, the ventral legs of a pellucid drab colour, tipped with darker drab hooks.

The pupa is half-an-inch in length, very plump, with the usual angles much rounded off, the abdominal rings bear little rounded eminences—traces of the larval spines; the tip of the abdomen is bent back at nearly a right angle, and there is a slight depression between the abdomen and thorax, which is broad and rounded; the wing-covers are well defined and rather prominent; the warmish white colour and texture of the pupa-skin may be compared to that of biscuit china; each abdominal ring is adorned with a transverse brownish-orange bar, having on its hinder edge squarish black spots, or sometimes a black bar with orange spots, and followed by a row of tiny black dots; the back of the thorax is marked with triangular streaks of black, outlined with orange, the antennae-cases and wing nervures are marked faintly with orange-brown, and the wing-covers and the eye- and leg-pieces with strong black blotches and dashes.

Emsworth: *March, 1872.*

DESCRIPTION OF A NEW SPECIES OF COLEOPTERA BELONGING TO THE
GENUS *PRIONOCALUS*, WITH NOTES ON THE OTHER SPECIES
OF THE GENUS.

BY CHAS. O. WATERHOUSE.

The characters given by Mr. Adam White for his genus *Prionocalus*, being founded upon the supposition that two male specimens received from Mexico were male and female, are in part erroneous. The apical joint of the palpi is described as being "securiform and much dilated;" this, however, only applies to the male; in the female the apical joint is elongate-triangular with the apex rounded, differing but little (except in size) from the preceding joint. The elytra do not quite cover the abdomen in the two female specimens before me; the

shoulders are not hooked in *P. Iphis*, although they project. The hind femora in the male project considerably beyond the apex of the elytra, whilst in the female they do not reach to the apex.

The three species described by Mr. White are all undeveloped males. The great development of *Pr. cacticus* is described hereafter, and presents the same differences from the minor variety as are exhibited in the larger and smaller specimens of *Pr. Buckleyi*.

The following table will serve to distinguish the species at present known:—

- A. Legs red-brown. *Pr. cacticus*.
- B. Legs pitchy-black.
 - a. Elytra strongly rugose at the base, finely granulose
at the apex *Pr. Atys*.
 - b. Elytra uniformly strongly rugose.
 - * Abdomen sparsely and not strongly punctured;
humeral angles of elytra not spinose. *Pr. Iphis*.
 - ** Abdomen somewhat thickly and very strongly
punctured; humeral angles of elytra spinose. . *Pr. Buckleyi*.

PRIONOCALUS BUCKLEYI, *sp. nov.*

Niger, sub-nitidus, fortiter rugosus; elytrorum angulis humeralibus fortiter spinosis; tibiis, tarsis, palpisque piecis; abdomine fortiter punctato.
Long. 28 lin.

Hab.: Ecuador (Yerba buena). Brit. Mus.

♂. Head quadrate, strongly rugose, with a strong tooth-like projection behind the eyes; forehead flattened, limited on each side by a ridge which runs from the base of the antennæ to the crown of the head, a very deep transverse impression in front of the base of the antennæ joined in the centre by a short longitudinal groove on the forehead, both the groove and the impression less punctured and more shining than the rest of the head; the clypeus concave, almost impunctate; labrum narrow, transverse, deeply emarginate, smooth, but with a row of punctures along the anterior margin; mandibles about equal in length to the head, bowed, deeply punctured, except at the apex; the apex of the left mandible securiform, with the dilated part preceded by a blunt tooth on the inside; right mandible acuminate, with a strong triangular tooth on the inside. Antennæ about equal in length to the body, the 1st joint large, strongly rugose, the 2nd to 7th joints sparingly but strongly punctured, the 8th to the 11th joints opaque, and longitudinally quinque-sulcate. Thorax transverse, rather more than twice as broad as long, convex, the sides strongly tri-spinose, the anterior spine the shortest; behind the third spine the sides are obliquely contracted to the base, the posterior angles prominent, dentiform; the disc is flat; the margins broadly depressed; the whole surface roughly

punctured, except the part next to the scutellum. The elytra are but little convex, much hollowed out before each humeral angle, at their greatest width rather less broad than the thorax, $1\frac{1}{2}$ times the length of the width at the shoulders, rounded at the base, broadest about the middle, gradually narrowed to the apex, where each elytron is rounded; the humeral angles are strongly reflexed, each furnished with a spine which is directed backwards; the margins are reflexed; the surface is very strongly rugose, very little less so at the apex than at the base.

The femora and tibiae are strongly punctured, more or less pitchy, especially the tibiae; the tarsi are scarcely punctured, pitchy. The abdomen is thickly and strongly punctured, the 4th and 5th segments being rugose, the latter emarginate.

A smaller specimen of the male of this species has the femora almost black, the humeral angles are less strongly spinose, and the mandibles are almost identical with those of the female. It is 18 lines in length.

♀. Head smaller, and relatively narrower than in the male, the spine behind the eyes more acute and smaller: the mandibles are a little shorter than the head, compressed, cultriform, strongly punctured, except on the inner edge; the left mandible is somewhat hatched-shaped at the apical half, and there is a small blunt tooth near the base on the inside; the apical joint of the palpi is not securiform but elongate-triangular, rounded at the apex. Antennae about the length of the elytra, with the three apical joints canaliculate. Thorax as in the male. Elytra considerably broader than the thorax, very convex, broadest rather below the middle, not much contracted towards the apex, where each elytron is very much rounded. The abdomen somewhat thickly punctured, especially at the sides (but not so much so as in the male), the fifth segment entire.

PRIONOCALUS CACICUS, White.

The British Museum has received a pair (♂ and ♀) of an insect from Peru, which I am unable to separate from *Pr. cacicus*, White, although the sizes of the two males are very different; that from Peru measuring (including the mandibles) 30 lines, whilst the type of *Pr. cacicus* is only 17 lines. The mandibles in the Peruvian insect are formed almost as in the large specimens of *Pr. Buckleyi*, but are less regularly bowed. The legs appear relatively stouter, and the elytra are less opaque.

The following is the description of the female Peruvian specimen of *Pr. cacicus*:—

Pitchy-black, sub-opaque; legs, palpi and antennae (base excepted) red-brown.

Head sub-quadrate, rather narrowed in front, with a strong acute spine on each side behind the eyes, very rugose, with a deep transverse shining impression at the front margin; a well-marked smooth ridge runs from the base of the antennae backwards to a level with the side spines, terminating in a small tubercle. Thorax transverse, twice as broad as the head at the eyes, the anterior angles prominent, acute; the sides with three strong spines, the anterior one the shortest; behind the third spine, the thorax is obliquely contracted; the posterior angles are prominent,

acute, and recurved; the surface is moderately strongly rugulose, with a longitudinal smooth ridge across the disc. The elytra rather broader than the thorax, $1\frac{1}{2}$ times the length of their width at the shoulders, broadest about the middle, not much contracted towards the apex, the apex of each elytron broadly rounded; the shoulders are rounded, recurved, furnished with a minute acute spine; at the base the elytra are strongly arched, deeply impressed on each side below the humeral angles, towards the apex flattened; the surface is moderately strongly rugose at the base, finely granular towards the apex. The legs are uniformly red-brown, moderately thickly and strongly punctured. Abdomen shining, with its sides and the whole surface of its apical segments sparingly but distinctly punctured.

Length, 22 lines.

British Museum: March, 1872.

NOTES ON CICINDELIDÆ AND CARABIDÆ, AND DESCRIPTIONS OF
NEW SPECIES (No. 14).

BY H. W. BATES, F.L.S.

OXYCHEILA NIGROÆNEA, n. sp.

Quoad formam, O. aquaticæ simillima, at tota nigra, suprâ politissima, elytris leviter æneo-tinctis; labro planato vel leviter bisulcato, nigro, nitido, dente apicali mediano magno, producto, utrinque dentibus 4 acutis armato; capite medio lævi, polito; thorace latiusculo, polito; elytris (♀) angulis humeralibus productis, sub-falcatis, maris apice breviter obtuse recte truncato, angulo suturali rotundato, femine postice latioribus, apice obtusissime rotundato, ad suturam conjunctim emarginatis: suprâ politissimis, nigris, æneo-tinctis, discrete punctatis, prope basin sub-rugulosis, prope apicem lævioribus; abdomen utriusque sexûs at in O. triste; pedibus, palpis, antennarumque articulis primis quatuor (reliquis griseo-pubescentibus) nigris, politis.

Long. 9—10 lin. ♂ ♀.

VAR. VARIIPES. *A typo differt tantùm femorum dimidio basali picco-vel clare rufo.*

The ♀ is remarkable for its broadened shape, with the elytra abruptly and broadly rounded at the apex without trace of truncature. The variety appears to offer no other difference from the type than the red base of the femora; the elytra in the ♂ appear rather more sinuate truncate with the sutural angle produced, but obtuse; all gradations, however, are found between it and the type.

Many examples, taken by Mr. Buckley in the Macas district, Equador, on rocks, in the middle of streams.

OXYCHEILA GRACILLIMA, n. sp.

Parva, elongata, angustata, nigra, elytris politis; capite suprâ alutaceo; labro planato, dentibus 9 magnis acutis armato, nigro, apice testaceo; mandi-

bulis rufis, palpis flavo-testaceis; thorace angusto; elytris angulis humeralibus rectis (apice obtuso), nullo modo productis, apice (♂ ♀) late truncato, angulis omnibus breviter spinosis, suprà passim sub-grosse punctatis, nitidis; antennarum articulis 1—2 nigris, apicibus rufis, 3 nigro, annulo mediano rufo, 4 rufo, apice nigro, reliquis pallide rufis; pedibus fulvis, coxis femorumque apicibus nigris. Long. $5\frac{1}{2}$ — $6\frac{1}{2}$ lin. ♂ ♀.

Remarkable for its narrow, sub-parallel form and small size.

Found in the same localities as the preceding.

OXYCHEILA CHESTERTONII, n. sp.

O. aquaticæ proxime affinis formaque simillima, differt labro antennisque nigris; nigra, sub-opaca; labro quam in O. aquatica breviori, basi concava, apice obtuso, dentibus deflexis, palpis nigris; elytris apice obtusis vix truncatis, suprà usque ad apicem punctulatis; pedibus nigris, femorum dimidio basali piceo-rufo; corpore subtus nitido. Long. $8\frac{1}{2}$ lin. ♂ ♀.

New Granada; collected by Mr. Chesterton.

OXYCHEILA POLITA, n. sp.

O. nigroaeneæ affinis, differt elytris (♂) apice depresso-explanato, productis, angustatis, obtuse truncatis, labro longissimo, albo-testaceo, etc.; nigra, politissima; labro dente mediano obtuso, palpis flavo-testaceis; elytris punctulatis; pedibus flavo-testaceis, femoribus apice late, tibiis anguste, nigris; antennis (♂) corpore longioribus, flavo-testaceis, articulis 1^o—2^o, 3ⁱⁱ—4ⁱ que apicibus, nigris. Long. 8 lin. ♂.

One example, in Mr. Belt's collection.

Chontalès, Nicaragua.

CICINDELA HISPIDULA, n. sp.

Angusta, parva, capite maximo, thorace angustissimo, cylindrico, medio leviter rotundato, antice posticeque valde constricto, thorace et elytris setis erectis elongatis dense vestitis; obscure cuprea, sub-opaca, humeribus nitidis, elytris utrinque maculis duabus sub-magnis marginalibus albo-testaceis; labro (♀) ut in Gen. Odontocheila elongato, 7-dentato, tentibus tribus medianis productis acutis armato, flavo-testaceo; mandibulis et palpis rufo-testaceis; capite inter oculos latissimo, dense striato; thorace subtiliter transversim strigoso; elytris elongato-oblongo-ovatis, humeris rectis, ad apicem obtuse truncatis, suprà dense sed discrete punctatis, maculis velutinis nigris variis; pedibus fulvo-testaceis, femoribus medio, tibiis et tarsorum articulis apice, fusco-cupreis; corpore subtus nigro, nitido; antennis fulvo-testaceis, apicibus fuscis. Long. 4 lin. ♀.

This curious little *Cicindela* would belong to the section in which *C. dromioides* is placed, were it not for its elongated 7-toothed labrum.

It may probably be generically distinct from *Cicindela*, but to decide this a knowledge of the ♂ is necessary. The tarsi are all ungrooved, and the palpi moderately short and simple.

S. Brazil (Parana, or Minas Geraes); collected by Mr. Rogers.

I owe my specimen to the kindness of Mr. Edward Saunders.

CICINDELA CHALCEOLA, n. sp.

C. cribratæ proxime affinis, at longior; pallide sub-aureo-ænea; labro (♀) flavo, transverso, medio paulo producto, spinaque magna mediana instructo; palpis flavis, articulis apicalibus fuscis; mandibulis ut in C. cribrata longissimis, gracillimis; thorace distincte transversim ruguloso; elytris apice rotundatis, angulo suturali breviter spinoso, suprâ crebre reticulato-punctulatis, lunula elongata humerali vix curvata et postice incrassata, lineola marginali pone medium antice et postice dilatata, macula triangulari marginuli prope apicem, et notula discoidali, albis; pedibus viridi-æneis, trochanteribus femoribusque flavo-testaceis; corpore subtus cyaneo, nitido, lateribus aureo-cupreis; antennis nigris, basi cyaneis.

Long. 3½ lin. ♀.

A larger and more robust insect than *C. cribrata*, from which it differs in colour. The white spots would appear less dissimilar if the short streak on the disc were connected by a transverse line with the short lateral vitta, and it doubtless would be so in some examples; the apical spot shows traces of prolongation into a lunule.

Interior of Northern Peru.

CICINDELA MICROTHERES, n. sp.

C. cribratæ proxime affinis, forma eadem, at differt colore nigro, elytris grossius rugoso-punctatis; labro albo, transverso, medio spina unica elongata instructo; palpis albis, articulis apicalibus nigris; capite et thorace sericeo-opacis, hoc minutissime rugoso; elytris quadratis, ad apicem late obtusis, angulo suturali spinoso, suprâ grosse crebre punctatis, punctis in rugulas transversas hic illic conjunctas, signaturis albis ut in C. cribrata (sc., lunula humeralis et apicalis lineolaque lateralis pone medium antice fasciam rectam emittens); pedibus cyaneis, femoribus basi trochanteribusque flavo-testaceis; corpore subtus cyaneo-nigro; antennis nigris.

Long. 3 lin. ♂.

Macas district, Equador (Buckley)

PENTACOMIA, nov. gen.

A species closely resembling the *Odontocheilæ*, taken by Mr.

Buckley in Equador, offers the peculiarity of ungrooved tarsi in all legs and in both sexes, which renders its introduction into that genus inadmissible. But it offers a further peculiarity, apparently of more importance, namely, densely pubescent soles to all five joints of the anterior tarsi of the ♂, the joints being, moreover, very slightly dilated. This last peculiarity it shares with the otherwise somewhat anomalous *Odontocheila egregia* and *Degandei*. I think it also very likely that *Cic. cupriventris*, Reiche, *Cic. Devillei*, Lucas, and *Cic. speculifera*, Brullé, agree with them in this respect. I propose, therefore, to institute a genus founded on the last-named point of structure, and to treat the sulcated tarsi as of minor importance. The previously-described *C. hispidula* may possibly belong also to the genus.

Gen. char.

Corpus cylindricum. Caput magnum, oculis maxime prominentibus. Thorax angustus, antice et postice valde constrictus. Labrum elongatum, 7-dentatum. Pedes graciles. Tarsorum ♂ articuli vix dilatati, omnes subtus densissime pubescentes, scopiformes.

PENTACOMIA CHRYSAMMA, n. sp.

P. egregiæ forma similis, at robustior; cylindrica, suprâ læte rubro-fusco-aurea, crebre sculpturata, subtus cyanea, lateribus cupreo-aureis splendidis; labro trapezoidali, flavo, 7-dentato, ♂ antice dentibus æqualibus parvis, ♀ dente mediano longissimo porrecto instructo; palpis flavis, ad summum apicem fuscis; antennis fulvo-testaceis, apicibus nigricantibus; thorace parte mediana breviter ovata, suprâ omnino creberrime grosse scabroso, margine postico transversim striato, linea dorsali inconspicua; elytris valde inæqualibus, utrinque 4-tuberosis, angulo suturali spinoso, suprâ densissime reticulato-punctatis, puncto laterali ab humero distante, altero discoidali longe post medium, maculisque duabus triangularibus marginalibus, quarum 1^{ma} pone medium, altera ante apicem, albis; pedibus testacco-fulvis, femoribus tibiis tarsisque apicibus anguste nigris.

Long. 4½ lin. ♂ ♀.

This handsome insect differs in colour from all other *Cicindelidæ*, being of a rich light golden-brown; the very dense and rough sculpture and the inequalities of the elytra rendering it sub-opaque. It is closely allied to *C. cupriventris*, Reiche.

Macas district, Equador (Buckley).

I have seen about a dozen examples.

Notes on British species of Meligethes, and addition of one species to our list.—M. Ch. Brisout de Barneville having recently published a Synopsis of the 67 species of this genus known to him (L'Abeille, viii; Jan., 1872, pp. 1—36), I propose to extract a few of his remarks as to food-plants, &c., affecting most of the British species,—adding some observations on other points.

M. Brisout's paper is scarcely descriptive, being itself a detailed dichotomous table; and great stress is laid by him upon the punctuation, depressions, &c., of the under-side.

M. lumbaris, according to M. Brisout, especially frequents species of *Genista*.

M. coracinus, flowers of *Galium* and *Prunus spinosa*. I have only seen two British examples of this species; one in Mr. G. R. Waterhouse's collection, the other (from Darenth) in my own. It differs from *M. fulvipes* in its more convex build, closer punctuation, duller appearance, and darker colour, the legs and antennæ especially being almost entirely black.

M. corvinus, on *Labiaceæ*. I have only seen Mr. G. R. Waterhouse's original British type of this species: it is of the size and build of *brunnicornis*, but much more finely and closely punctured, deep shining black in colour, with broad anterior tibiae, which have the outer edge extremely finely and evenly crenulated.

M. fulvipes (sp. 6.?, Wat. Cat.), on *Genista*. I have recently observed this from the north of England.

M. subrugosus, very common in France and Germany on flowers (unique as British, in Dr. Sharp's collection).

M. symphyti, on *Symphytum officinale*. This has recently occurred to Mr. E. A. Waterhouse so far north as Ripon (*ante*, p. 38).

M. Kunzei, on *Mercurialis perennis* and *Lamium album*. I have, subsequently to my original record of this species, found it in Mr. G. C. Champion's collection, and also in that of Mr. G. R. Waterhouse (from Reigate).

M. brunnicornis, on *Lamium album*.

M. difficilis, on *Labiaceæ*, especially on *Lamium album*.

M. memnonius is apparently not known to M. Brisout. Its equivalent, *M. morosus*, not as yet recorded from Britain, frequents the same plants as *M. difficilis*. *M. morosus* and *memnonius* appear to be very closely allied; but from Mr. Waterhouse's notes hereafter mentioned, as well as from Erichson's description, it would seem that our insect is correctly ascribed to the latter.

M. viduatus, on *Salvia pratensis*, *Galeopsis*, and *Mentha aquatica*.

M. pedicularius, on *Lamium album* and *Salvia pratensis*. Appears to be not uncommon in parts of Scotland.

M. bidens, on *Trifolium medium*.

M. marrubii, on *Marrubium vulgare*.

M. serripes, on *Salvia pratensis* and *Saponaria officinalis*.

M. umbrosus, often on *Genista*.

M. maurus, on *Salvia* and *Mentha*. This species has, in my opinion, certainly not as yet been correctly recorded as British; and all the supposed exponents of it in this country that have come under my notice appear to be specifically identical with *M. ovatus* (Ent. M. M., vi, p. 283). The true *maurus* is at least of the same size as *M. umbrosus*, Stm., but of a rather less broad shape (being sub-oval instead of short sub-ovate), with its thorax rather longer and narrower, and more inclined

to parallel at the sides, and the punctuation of its upper surface not quite so close. The anterior tibiæ of *umbrosus*, moreover, are scarcely perceptibly crenulated on the outer margin until the apical third, where there are about four very small teeth, which are often almost obliterated, and of which the first and last are usually the most prominent; whereas in *maurus* the outer margin is gradually more strongly and sharply denticulated towards the apex, where the usual projecting and larger teeth are more distinct than in *umbrosus*.

Compared with *umbrosus*, the British insect hitherto considered by us as *maurus* (and which agrees well with description of *ovatus*, and with my types of the latter corroborated by M. Brisout) is, on the average, half a line smaller; much more shining, having its punctuation not nearly so close, and with its thorax certainly not longer or narrower in proportion, and its anterior tibiæ even more dilated towards the apex, and with their outer margin very coarsely and irregularly "jagged." This species varies considerably, both in size and the armature of its anterior tibiæ, and sometimes a little in the punctuation of its elytra; though not quite to such an extent as its immediate ally *flavipes*.

According to M. Brisout (and this is corroborated by the only continental type of *maurus* I have seen), *M. maurus* is rather larger than *umbrosus*.

M. incanus, Sturm. I have observed, among some unexamined specimens of British *Meligethes* belonging to Mr. G. R. Waterhouse, an individual labelled *incanus*, Stm., Er. (Ins. Deutschl., iii, p. 190), and, in my opinion, correctly referred to that species, which is new to our list. It certainly cannot be confused with any of our recorded *Meligethes*. This specimen was taken by Mr. Waterhouse at Darenth Wood, on *Echium vulgare*, in June, 1859. It is of the size of ordinary *ovatus* (*maurus*, Wat. Cat., nec Stm.), being apparently a small example of its species, which is given by Erichson as only $\frac{1}{4}$ lin. less than *umbrosus*; and is of an exactly oval outline, convex, dull (being as closely and finely punctured as *umbrosus*), clothed with very evident, depressed, grey hairs, with the two basal joints of the antennæ pitchy-testaceous, and the anterior tibiæ considerably dilated towards the apex, with their outer margin finely denticulated to a little below the middle, and then armed with three or four stronger and rather irregular teeth.

According to M. Brisout, *M. incanus* has been found by him on *Solanum dulcamara* and *Nepeta cataria*. His characters for the species appear to agree well with the insect above recorded.

M. seniculus, Er., according to M. Brisout, is only a slight variety of *murinus*, Er., which name he retains. He does not, however, refer to Erichson's character for the latter, of the possession of stout setæ on the entire outer edge of the posterior tibiæ.

M. ovatus, on *Labiaceæ*. Not uncommon at Mickleham and Esher. A constant character for this species seems to be afforded, according to M. Brisout, by the slight sinuation of the posterior margin of each elytron, the sutural angle of which forms a slight rounded projection (i.e., the apex is not truncate).

M. flavipes, on *Ballota nigra*, *Melilotus*, and *Cirsium lanceolatum*.

M. rotundicollis, on *Trifolium medium* and *Genista*. Since my original record of this species, I have observed it in the collections of Mr. Waterhouse, Dr. Power, and Mr. Champion.

M. lugubris, on *Mentha*.

M. palmatus, Er., according to M. Brisout, is the ♂ of *obscurus*, Er., which name he employs. It occurs on *Teucrium scorodonia*, *Mentha aquatica*, and *Cynoglossum officinale*. He does not recognise *M. distinctus*; to which, as it is described as "moderately shining," and as equalling *small erythropus* in size, I think our common palmated species cannot be correctly referred; indeed, having read Mr. G. R. Waterhouse's notes of his comparison of British types with Erichson's own specimens at Berlin, and having also carefully examined those types, I have little or no doubt that the males of our insect are *palmatus* and the females *obscurus*.

M. bidentatus, on *Lotus*.

M. erythropus and *M. exilis*, on *Fapilionaceæ*.

M. solidus, on *Genista* and *Lotus*.

My *M. pictus*, according to M. Brisout, is the *M. mutabilis* of Rosenhauer (Thier. Andalus., 1856, p. 102), hitherto only recorded from Algeria, Spain, and Provence,—localities not much in accord with the north-eastern coast of Yorkshire. *M. mutabilis* is sometimes entirely black, whereas all of the numerous specimens of *M. pictus* that I have seen have a red spot on each elytron; but, as I have myself supplied M. Brisout with specimens of my insect, there can be no doubt of his knowledge on that point.—E. C. RYE, 10, Lower Park Field, Putney, S.W.: March, 1872.

Note on Pogonius littoralis.—M. le baron M. de Chaudoir, in his recent "Essai monographique sur le groupe des Pogonides," in the Annales de la Soc. Ent. de Belgique, xiv, p. 26, after pointing out that the true *P. littoralis* of Dejean is only found in the south of France, Algeria, Dalmatia, and near Odessa (and that presumably it is to be found in Spain, Italy, and Greece), remarks that Dawson's *littoralis* is probably only a large variety of *P. chalceus*, as the shape of the thorax and the laterally effaced striæ of the elytra mentioned by the English author do not fit the true *littoralis*. The only variations of *chalceus* mentioned by Chaudoir are in size (not relative length of thorax and elytra), the more or less rotundity of the sides of the thorax, and coloration; consequently the salient diagnostic characteristics of Dawson's insect remain unaccounted for: but it should be also remarked that the latter (Geod. Brit., 71) notices other particulars referred to by Dejean, upon which he states that little reliance is to be placed; thus leaving room for the suspicion that his insect is not identical with Dejean's.—ID.

Note on the larva-case, &c., of Clythra 4-punctata.—Prof. Westwood, in his excellent 'Introduction,' informs us, on the authority of M. Wandouer, and of a statement in Fuessly's 'Archives,' that "the larvæ of the genus *Clythra* inhabit hairy cases." This statement I find is inapplicable to the case of *C. 4-punctata*, which I found in numbers in the nest of the Scottish wood-ant (*Formica congerens*?) during a short visit to Braemar in May last. Besides being destitute of hairs, it differs considerably in structure from that figured at p. 383 of vol. i of the 'Introduction' as belonging to *C. 3-cuspidata*. It agrees with it in being pear-shaped and open at the narrow end; but, in addition, affords an interesting illustration of how strength may be imparted to a structure at the smallest cost of material with the least additional weight.

From the upper side of the mouth, which is slightly bent downwards, and at

the distance from each other of about half a line, there run backwards, divergently, two ridges for about half the length of the case. A little below these, and parallel to them, are two other ridges, each shorter than the one next above it. The lowest is, however, sometimes obsolete. Between the two upper ridges first mentioned, three other pairs parallel to them, and consequently meeting at points more and more removed from the anterior edge or mouth, give a succession of three V's, placed one within the other, so as to cover the whole of the dorsal portion of the case. This pattern is frequently completed by one side of a V passing its own apex and joining the opposite side of its enclosing V, and thus forming a zig-zag line along the centre. The remaining surface of the case is comparatively smooth, and is wholly of a dull black colour. It measures from 5 to 6 lines in length, and from $1\frac{1}{2}$ to 2 lines in diameter at the broad end.

The larva, like that of *C. 3-cuspidata*, "has the body curved and not greatly unlike that of a small cockchafer." The head is somewhat rugose, and, with the legs, is of a rusty yellow colour. It seems to live chiefly in the old and less frequented galleries at the base of the ant-hill, and to feed upon the spongy material of which they are composed. When full-grown, about the end of May (24th), the mouth of the case is closed up with a portion of the same excrementitious material as that of which the body of the case is composed, and is generally attached to a twig or other portion of the nest. Occasionally, when pressed for room, the cases are attached to each other; and a poor unfortunate, not ready for its change, has been doomed to feed, dragging about with it a sleeping partner for a whole week. The insect remains in the pupa state from six to seven weeks, the first beetle having appeared July 9th. They continued to appear for twelve days. A specimen was, however, taken by myself at Ballater, on the top of an ant-hill, on May 6th.

When the empty cases are found, it will be observed that the posterior portion, and not the mouth, is the quarter by which egress has been effected. The beetle, however, comes out head foremost; showing that, previous to becoming a pupa, the larva had reversed its position. In its imago state, this would be impossible. —ROBT. HISLOP, Blair Bank, Falkirk: 7th February, 1872.

Notes on recent captures of Coleoptera.—I have recently taken in flood refuse on the banks of the Thames at Walton, three or four examples of *Ptenidium atomaroides*, Mots. (determined by the Rev. A. Matthews, who informs me that my examples are specifically identical with his own unique British specimen recorded in Ent. Mo. Mag., viii, 152). Amongst a great many ordinary species, taken at the same place, the following seem noteworthy:—*Homalota Eichhoffi* (only before recorded in this country from Rannoch), *angustula* (common), and *canescens*. *Ilyobates forticornis*, two or three. *Ocyus fuscatus*, *Stenus opacus* (several), *Argus plantaris*, *melanarius*, and *fuscipes*. *Lathrobium punctatum* (several), *quadratum*, *longulum*, *boreale*, &c. *Achenium humile*, three. *Philonthus rubripennis*, *fumarius*, &c. *Protinus macropterus*, *Stilicus geniculatus*, *Myrmedonia limbata*, *Rhinoneus inconspicuous*, *Baridius lepidii*, sparingly. *Pterostichus gracilis*, *Anchomenus micans*, *Euplectus ambiguus*, *Bryaxis hæmatica*, common (and in abundance at Staines), *Stenolophus exiguus*, in abundance, unaccompanied by *luridus*, &c.

I have also taken in flood refuse, on the river bank at Staines, *Scydmaenus pusillus*, a few specimens of both sexes (I subsequently met with a pair of this at Tottenham, on the banks of River Lea, and a single specimen at Walton); *Dromius sigma*, &c.—G. C. CHAMPION, 274, Walworth Road, London, S.E.: March, 1872.

Capture in Scotland of Zelleria saxifragæ, Staint., a species new to the British list.—Last July I captured, at Braemar, a specimen of this species, which is described and figured by Stainton in Vol. xi of the 'Natural History of the Tincina,' and which has hitherto been found only on some of the Alps of central Europe. It was found amongst *Saxifraga aizoides*: on the continent the larva is known to feed upon *S. aizoon*, which is not a British plant.—F. BUCHANAN WHITE, Perth: March, 1872.

Note on Pempelia albariella.—A short time since, I received from my friend Dr. Standinger, a beautiful pair of *Pempelia albariella*, Zeller. It is very distinct from the species which was taken in the Isle of Wight by Mr. Davis, to which, indeed, it bears but little resemblance.

Mr. Davis' insect is more allied to *P. obductella* and *P. ornatella*. I possess many of the European species of *Pempelia*, but I cannot find the Isle of Wight insect among them; and, if it is not described by any continental author, it must, of course, retain the name of *Davisella*, given to it by Mr. Newman.—HENRY DOUBLEDAY, Epping: February 13th, 1872.

[I, too, have lately received from Dr. Standinger, under the name *P. albariella*, Zell., a species which differs considerably from Mr. Davis' insect.—H. G. K.].

Notes on Lepidoptera from the neighbourhood of Norwich.—On the 28th August last, I determined to make a final attempt to obtain a few *Depressaria granulosella* at sugar, in what had been their favourite locality the year before. But the weather would not be propitious, and I saw none, but was somewhat consoled by finding, on an old ash tree, the first *Cirrhædia xerampelina* that I ever saw alive.

It was a beauty, and I would gladly have worked for more, but was on the point of leaving home for a fortnight, so I indicated the locality to my young friend Mr. Frank Wheeler, who was staying in Norwich at the time, and begged him to work it up. This he did, to some purpose; for, on my return home in the middle of September, he showed me not only several *xerampelina*, but a lovely series of *Xanthia gilvago* and *citrago*, with one *aurago*, and *Agrotis saucia* and *Thera firmaria*, all of which had been taken in the same neighbourhood.

Not having seen either of the two rarer *Xanthiæ* alive, I was slightly excited, and lost little time in making their acquaintance. On the first night, however, only *gilvago* (three specimens) appeared; and it was not till September 27th that I took *aurago*. Even then it was very scarce, and *gilvago* nearly over, so many journeys produced few specimens; but two or three more *Thera firmaria* turned up, as well as specimens of *Xylina rhizolitha* and *Calocampa exoleta*.

Of course, the sugar was enlivened by swarms of *Anchoceles*, *Orthosia*, *Glæa*, and other common things, and *Calocala nupta* showed its grand proportions occasionally till the middle of October; but, strange to say, though many oak trees were sugared, *Chariptera aprilina* was not common, and of *Anchoceles rufina* but two specimens occurred.

One night (October 16th), the wind being furious, and the moths unable to face it, I searched a dead hedge on the sheltered side of a plantation, and found sitting on the sticks, not only the common *Orthosia macilenta*, *Glæa vaccinii*, and *Xanthia ferruginea*, but also two worn females of *A. gilvago* still out. Here also were fine *Cidaria miata*, and lovely varieties of *Oporabia dilutata*, ♀.—CHAS. G. BARRETT, Norwich, 15th January, 1872.

Notes on British Tortricidæ.—On July 11th, 1868, I beat from an oak tree in a wood on the borders of Hants, a female specimen of a *Tortrix* with which I was unacquainted; but as, after a lengthened search, no more specimens could be found, I came to the conclusion that it must be an extraordinary variety of *T. pyrastrana*, and as such it remained in my collection till very lately. Having, however, undertaken an investigation of our native *Tortricidæ*, I sent this specimen to Mr. Stainton, who expressed the opinion that it was *T. piceana*, Linn., and in this he is decidedly confirmed by Professor Zeller.

The only previously recorded British specimen is, I believe, that in Mr. Edwin Shepherd's collection, obtained from the New Forest by the late Mr. Stone, and noticed in a note to the genus in Wilkinson's 'Tortrices,' p. 65. It is singular that both captures should be in the same county, and probably in very similar localities. Both, moreover, are females.

I also find that I have two worn specimens of *Orthotænia ericetana*, mixed with an allied species, both of which were taken in one of the woods near Haslemere, thus adding another scarce species to the rich fauna of that locality.

I am anxious to obtain, for examination, British specimens of *Tortrix costana* and *litorana*, *Penthina similana*, Wilkinson, *Halonota ravulana*, *Mixodia rubiginosana* (*Bouchardana*), *Stigmonota vernana*, Knaggs, *Retinia duplana*, *Catoptria modestana*, *Sericoris Daleana*, *Eupæcilia griseana* and *vectisana*; and shall feel greatly obliged to any friend who will lend them to me. If any one can favour me with a sight of native examples of *Halonota costipunctana*, *Stigmonota Heegerana*, *S. pygmaæana* or *Argyrolepis Mussehliana*, I shall esteem it a particular favour.

I also want local series, for examination, of the unicolorous species of the genus *Dicrorampha*, especially *ulicana*, *saturnana*, *senectana* and *tanaceti*, or any reliable particulars of their life-histories; also any information respecting the preparatory states of our pea-feeding species of *Endopisa* (*nebritana* and *pisana*) tending to prove, or disprove, their distinctness.—ID.

Results of experiments on variety breeding (Tephrosia crepuscularia).—The following note may prove interesting to those who have bred varieties of *Lepidoptera*.

A few years ago, I obtained three batches of ova from dusky smoke-coloured females of *Tephrosia crepuscularia* (*laricaria* of Stainton's Manual) by males of the ordinary and typical clayey-grey colour. From these ova, I reared to maturity in the following year about 160 moths, in the exact proportions of half dark and half pale. I now had the opportunity of obtaining ova from *crepuscularia*, of which both parents were dark. They thrived, and my series the next year emerged in about the proportion of two dark to one pale.

Again, I obtained ova from dark parents out of this batch—darkly bred dark specimens: and this year my whole series (90) has emerged dark, not one casting back to the original and natural colour.

Before I reared this species, I used to (and I still can) take the dark variety at large in the larch plantations here, but sparingly, and in a much lower proportion,—say one dark to thirty of the typical colouring.

If others who have reared varieties of any species would publish their experience, it might elicit some interesting facts.—JOHN T. D. LLEWELYN, Ynisgerwn: March, 1872.

[Such observations as these by Mr. Llewelyn are most valuable. We cordially endorse the opinion expressed in his concluding paragraph.—EDS.]

Note on the variation of Triphæna orbona, ♂c.—My breeding cage is now yielding me a fine series of *Triphæna orbona* from eggs laid by the black and red varieties (*Curtisii*, Newm.). The proportion of dark black, reddish, and light forms is about equal.

I have bred some remarkably fine *Demas coryli*, *Ceropacha flavicornis*, *Trachea piniperda*, *Halias prasinana*, &c.—G. NORMAN, Cluny Hill, Forbes, N.B.: 21st February, 1872.

On a Trichopterous insect (Limnophilus) from the Falkland Islands.—So little is known of the natural productions of these distant British possessions, that any note concerning them, however meagre it may be, can scarcely fail to be of interest; and the present one I take to be of more than passing value, inasmuch as it throws light upon a very remarkable point in the geographical distribution of insects.

Some little time since, my friend Mr. Bates received a small consignment, chiefly of *Coleoptera* (in spirits), from those Islands; and among them were two specimens of a Caddis-fly. Both are females, and this circumstance (combined with their inferior condition) renders it inadvisable that a description should be drawn up, or name given, without information regarding the other sex. They appear to represent a species of *Limnophilidæ* of about the size of the European *vittatus*, *centralis*, *ignavus*, or *striola*, and much resemble the two latter in *facies*.

I have several times called attention to the apparently total absence of the family *Limnophilidæ* (so abundant in the temperate regions of the north) in the Southern Hemisphere; and it was not until I had become acquainted with Gay's work on Chili, and was informed by Herr Brauer that the Vienna Museum possessed insects of this family from that country, that I fully realised the correctness of my formerly expressed suspicions as to the quarter in which its representatives might be sought for with a probability of success.

These two small insects, therefore, furnish another proof of the affinity of the insect-fauna of the extreme southern parts of South America with that of Europe, Northern Asia, and extra-tropical North America. The port of Stanley, Falkland Islands, has of late years become an important place of call and harbour of refuge for mercantile shipping, and it will thus probably be difficult to decide, in some cases, as to which animals and plants are really indigenous and which introduced. But a Caddis-fly occurring there cannot be other than truly indigenous.—R. Mc LACHLAN, Lewisham, 29th January, 1872.

Eristalis tenax attracted by painted flowers.—In the afternoon of the 27th August, 1871 (a bright, sunny day), a specimen of *Eristalis tenax* entered my sitting room through the open window, and, flying in a straight line towards one of the flower-bunches represented on the wall-paper, hovered in front of, and at last settled on one of the painted red flowers. Very soon an angry buzz proclaimed that the fly had discovered its mistake; but, not content with having been deceived once, it abruptly left the spot and successively visited several other bunches, darting very noisily and rapidly from one to the other. After having watched its proceedings for some minutes, I secured it. Of course the well-developed eyes of this Dipteron betoken great visual power; but it is not often that a lucky accident helps us to prove that sight alone directs it to flowers, because, in the case of

those natural odoriferous, we can never be certain that their scent has not helped to attract the fly.—ALBERT MÜLLER, Eaton Cottage, South Norwood, S.E. : 10th February, 1872.

Sudden and unaccountable disappearance of particular species of insects.—On reading over the remarks by Mr. Edward A. Waterhouse on this subject in the February number of the Magazine, I am reminded of a circumstance that occurred to myself in the first week of July, 1861. I was out on an insect-hunting excursion round Lochaber Loch, about five miles from Dumfries, a place at that time very famous for *Lepidoptera*. On returning home by way of Dalscairth, I thought I would just look in and see what could be discovered on a small patch of meadow-land close by the roadside. *Procris statiles* was hanging on almost every blade of grass: I had never seen the insect before. I stood spell-bound with wonder and astonishment; their fine blue-green wings glancing and reflecting in the sun was unquestionably the finest entomological sight I ever witnessed. I had with me at the time only some ten or twelve empty boxes, which I soon filled, putting three or four in a box, without the aid of a net. I went back next morning, thinking to take a good supply, but not one was to be found; nor have I ever met with the insect since, although I have never failed to look for it. About the same period (1861), *Vanessa Io* was rather a common butterfly, both in Dumfries and Kirkcudbright: for the last eight or nine years I have not seen a single specimen.—WM. LENNON, Crichton Royal Institution, Dumfries: February 8th, 1872.

On the relation between generic and specific names.—I am glad to find that Dr. Sharp is not enamoured of the “deceptive” Pauline, and am much obliged to him for his reasons in support of Dr. Staudinger’s conclusion (*ante* p. 254). But, if my friend will excuse me for saying so, I think he misapprehends the Linnean method of nomenclature.

I do not accede to the proposition that “the name of the species (meaning thereby, the specific or trivial name) is the real basis of zoological nomenclature.” No doubt, in a mononymic system, each word adopted or formed as the name of a species would be or become, when applied to the object, a noun substantive; and it was this very circumstance which necessitated the introduction of a different system of nomenclature. In a mononymic system, we should require as many separate nouns as there are objects to be named; if a separate name were framed for each species, it would be impossible to recollect them all; the multiplicity of natural objects and the weakness of human memory required, therefore, some artifice to make it possible to recollect or apply their names. The Linnean artifice is, to name an object by means of two steps in the successive division of objects into an ordinate system of classification. Each genus has its name, which is a noun substantive; and the species is marked by the addition of some epithet to the name of the genus—by the addition of another word, which may be, but is not necessarily, a noun substantive; which in fact is more frequently an adjective; and which, when a substantive, is epithetic or used adjectivally.

“*Insectum nomine generico et specifico ritè est nominatum*,” as Fabricius hath it (Phil. Ent. vii, 53). “The name of the insect consists of the name of the genus as a substantive, and of the name of the species itself as an adjective; the generic

name must be a substantive; the specific name is either a pure adjective (as *Carabus auratus*), or a substantive in apposition with the generic name (as *Ptinus fur*), or in the genitive case (as *Dorcadion Spinolæ*)." Such, at least, was the view of the Dresden Congress of 1858. See Berlin. Entom. Zeitsch., ii, Appendix, p. xi).

According to Dr. Sharp, "the natural course of nomenclature is this—a name is given to a species.....the generic noun is a mere secondary affair.....this latter being really much more adjectival than the specific noun." According to Linné, the generic name must be fixed, before we attempt to form a specific name; "the latter without the former is like the clapper without the bell." The name of the genus being established, the species may be marked by adding to the generic name "a single word taken at will from any quarter," i. e., any casual or arbitrary appellation. See the *Philosophia Botanica*, which, though containing many capricious and unnecessary rules of nomenclature, is deserving of more consideration than it appears to receive at the present day.

The binary nomenclature then denotes an object by the generic and specific names; neither the generic name alone, nor the specific name alone, is the name of the object; it is the two together that constitute the name. And of the two, I, in opposition to Dr. Sharp, but in accordance with Linné, the founder of the system, hold that the generic is the primary and the species the secondary name. The species is the unit for classificatory purposes, but the genus is, in the binary system, the unit or base of nomenclature. The genus is, for the purpose of nomenclature, a unit, even though it include many species; its name is a noun substantive of the singular number, whilst all the higher groups have plural names.

A bad habit has sprung up amongst Entomologists,* of using the trivial name without the generic—against which I take this opportunity of protesting. Thus, I frequently see lists of desiderata, or reports of captures, including (say) *urticæ* or *typhæ*, *littoralis* or *rhododactylus*. How in the world is any one to know whether the insect intended is a butterfly, a beetle, or a bug? Is the *urticæ* in question a *Vanessa*, *Spilosoma*, or *Habrostola*, a *Brachypterus* or *Ceuthorhynchus*, or a *Phygadeuon*? is the *typhæ* a *Nonagria*, *Donacia*, *Chilacis*, *Telmatophilus*, or *Mesoleptus*? is the *littoralis* a *Leucania* or a *Sericoris*, a *Pogonus* or a *Pæderus*, a *Cercyon*, a *Silphus*, or a *Stenus*? is the *rhododactylus* a *Pterophorus* or a *Phloxophthorus*?

To tell me that *niger*, when used as a specific name, "indicates a certain definite object," is untrue, if the specific name be divorced from the generic name. If we had a mononymic system, in which the same word was never applied to two different objects, then the specific name *would* indicate a certain definite object; but as, in the binominous system, the same specific name may be repeated any number of times provided it comes not twice in the same genus, it is simply illusory to say that the word *niger*, by itself, indicates any definite object at all. Which does it indicate? *Gobius niger*? *Hyoscyamus niger*? *Hemiteles niger*? or *Pterostichus niger*? a fish, a plant, or an insect? or what?

"The two words *Lycæna Minimus* are analogous (says Dr. Sharp) to the two words *Yew tree* (or rather, *Tree yew*) in ordinary language." I submit that they are nothing of the sort. "Tree" is no part of the name of the Yew, any more than *Insectum* is part of the name *Lycæna*. "Tree" is not the name of a genus, like *Lycæna*; and "yew" is not a specific name, like *Minimus*. "Yew" is itself

* ? Collectors.—Eds.

the generic name; *Taxus baccata* is the scientific name of "the common yew," and *Taxus* corresponds to "yew," as *baccata* corresponds to "common." I do not recall the name of a second species of *Taxus*; let us take *Juniperus* instead. The analogy is not between *Lycæna Minimus* and "*Juniper bush*" or "*Bush juniper*," but between

The common JUNIPER, *JUNIPERUS communis*, and *LYCÆNA maxima*.

The dwarf JUNIPER, *JUNIPERUS nana*, and *LYCÆNA minima*.

If *communis* and *nana*, the epithets by which in the universal botanical vocabulary we distinguish the two species of *Juniperus*, are nouns substantive, I suppose that "common" and "dwarf," by which in the local vocabulary we distinguish the same two species, have as good a right to claim substantive rank. But I submit that *Minima* is just as much (and no more) the name of the particular kind of *Lycæna* as "common" is the name of the particular kind of *Juniper*, *i.e.*, it is part, and only part, of the object; and that *Minima* is just as much (and no more) a noun as "common" is a noun, *i.e.*, it is a noun adjective.

Again, there is no analogy between "*Lycæna, Minimus*" and "*Staphylinidæ, Staphylinus*." The former is the name of an insect, the latter is not. *Staphylinidæ* is a noun of multitude, a collective noun, the name of a group of which *Staphylinus* is a member; and just as a man's "chattels" include alike his horses and his household furniture, so the group *Staphylinidæ* may include things of any gender. The single word *Staphylinidæ* is the name of one thing, and the single word *Staphylinus* is the name of another thing; but "*Staphylinidæ Staphylinus*" is not and cannot be the name of anything. On the other hand, the single word *Minima* is not the name of anything, but *Lycæna Minima* is.

I confess that Dr. Sharp's last paragraph puzzles me. I cannot follow him into the region of "universal grammar." I am not acquainted with it; and I will only suggest that it is better to "handle Latin and Greek words according to the rules" of Latin and Greek grammar. This may be a "curious classical prejudice;" if it be, though I can lay no claim to classical scholarship, I plead guilty of the curicus prejudice.—J. W. DUNNING, 24, Old Buildings, Lincoln's Inn: March, 1872.

Reviews.

FAUNA PERTHENSIS; Part i, *Lepidoptera*; by DR. F. BUCHANAN WHITE. 1871. Published by the Perthshire Society of Natural History.

Either the possession of the far-famed Rannoch district, or of an indefatigable President of their local Natural History Society, or of both combined, has called forth an amount of energy among the Perthshire Naturalists that those of some other counties would do well to copy. Not the least significant sign of their activity is the contemplated publication of a 'Fauna' of the county, of which the first instalment is now before us. The list furnishes much valuable information to the general entomologist, both British and foreign, more especially in the judiciously interspersed remarks on the variations to which many species are subject in the district, a fact to be respected, when we read that the elevation of the land ranges

from the sea-level up to nearly 4000 feet. A valuable introductory portion precedes the list of species, with much interesting matter concerning aspect and climate, and a comparative view of the number of Perthshire *Lepidoptera*. The weak point is the break-down at the end of the *Crambidae*: a brief list of *Tertrices* is given, but the *Tineina*, &c., are (alas!) nowhere. The county is divided into districts according to the various watersheds, with a good outline map explaining them. In considering the methods of sub-division to be employed we are told that a division by parishes was rejected as unnatural. With all respect for our Perthshire friends, we feel tempted to enquire whether the actual boundaries of the county are not, for the most part, equally unnatural. What if the persecutions by our friends should cause an exodus of Vertebrates and Invertebrates into the neighbouring counties of Argyle, Stirling, Inverness, &c.?

TRICHOPTERYGIA ILLUSTRATA ET DESCRIPTA. A MONOGRAPH OF THE TRICHOPTERYGIA. By the Rev. A. MATTHEWS, M.A., Oxon. London: E. W. JANSON, 28, Museum Street. January, 1872.

We have, at last, to congratulate the entomological world and our esteemed correspondent upon the publication of this *de minutissimis opus maximum*; the 189 closely printed quarto pages and 31 plates of which (comprising upwards of 320 separate objects) cause the 98 octavo pages (very rivulets of type meandering through wide meadows of margin) and 9 plates of Gillmeister to look insignificant enough. To show how the study of these wonderful atoms has increased since 1845, the date of the latter work, it may not be out of place to note that the single genus and 36 species of Gillmeister have now increased to 21 genera and 149 good species, of which latter 78 are recorded from Great Britain.

The descriptive part of Mr. Matthews' work is written wholly in Latin, the portion relating to the general characters being also given in English, in which language the introductory chapter is also written.

The author places the *Trichopterygia* between the *Philhydrida* (or *Hydradephaga*) and *Brachelytra*, commencing the group with *Nossidium*, and finishing with *Ptinella*, from which genus the *Brachelytra* proceed by an almost imperceptible gradation. Admitting the decided relations between this group and certain of the *Trichopterygia*, it seems, however, to us that the links between the latter and *Gyrinus* or *Cercyon* (as the case may be) are quite unsatisfactory. But this will only afford another instance of the impossibility of reducing natural classification to a straight or circular line.

The original descriptions of all genera and species already published are given in Latin, according to the authors' names, in alphabetical order. Next follows an elaborate account of the external anatomy, with notices of larvæ and pupæ and of the limited portions of the internal anatomy known to the author. Then, after a synoptical table of genera, commences the descriptive portion of the work, the following genera and species being characterized as new: *Euryptilium* (p. 63), for the reception of *Trichopteryx saxonica*, Gillm.; *Throscidium* (p. 64), for two new species, *Germainii* and *Fairmairii* (both from S. America); *Motschulskium* (p. 72), in honor of the well known Russian Coleopterist now deceased (whose acumen ap-

pears to have been concentrated with marked success upon this group, though his polygraphic propensities have certainly not elevated his rank in any other), to receive a new sp., *sinuatocolle*, from N. America; *Ptenidium Kraatzii*, from Scotland (but originally published in this Magazine, ante, p. 152); *P. Mannerheimii*, N. America; *Ptilium Sharpi*, Vancouver's Island; *P. Foersteri*, France; *Microptilium* (p. 107), for *T. pulchella*, Allib.; *Trichopteryx Aubai*, *T. Motschulskii*, *T. Wenckeri*, *T. Alliberti*, and *T. Sallæi*, S. America; *T. Poweri*, England (*Chevrierii*, Matth., olim); *T. Reichei*, *T. diffinis*, *T. Josephi*, and *T. Henrici*, N. America; *T. Marseulii*, France; *Actinopteryx* (p. 148), to receive *fucicola*, Allib.; *Ptinellodes* (p. 158), to receive *Ptilium testaceum*, Lec., nec Heer (renamed *Lecontei*); *Pteryx Duvalii*, N. America.

Some changes in nomenclature are also made, original synonymy is given, and corrections of errors are noted (*à propos* of which it may be observed that the unnoticed errata of the work are somewhat numerous).

After this, the author gives descriptions of species observed since the commencement of his work, the following being new: *Nephanes meridionalis*, S. America; *Trichopteryx Hornii*, N. America.

37 species are recorded as unknown to Mr. Matthews, and 28 others as indicated only by name, with no descriptions; and the work concludes with an account of the 58 anatomical preparations from which its figures and descriptions were taken.

The first 19 plates, consisting of outline engravings from the author's drawings of general points of structure, &c., and of the imago, with highly magnified anatomical details, of the typical species of each genus, appear to be as near perfection, for accuracy, as could be attained; but the remainder, on which are figured limbless half-bodies, especially intended to exhibit superficial sculpture, seem scarcely so satisfactory; as, however accurate their outline, their want of facies is most likely to cause their recognition anything but easy to all except those who have considerable knowledge of the group. The medium of lithography, moreover, being hardly adequate to represent minute characters of surface, these plates will not, as figures, bear comparison with Sturm's beautiful engravings in Gillmeister's work above mentioned; but it would seem that the beauty of these latter is their only claim to attention.

The eccentricities of *Astatopteryx* and the Tachyporiform *Limulodes*, with its wonderful mesosternum, will, it is to be hoped, have the effect of inciting a more general study of this somewhat neglected group.

Obituary.

Dr. Franz Xaver Fieber.—We learn from Deyrolle's 'Petites Nouvelles Entomologiques' of the 15th March, that Dr. Fieber died at Chrudim, in Bohemia, on the 23rd February, aged 65. European Hemipterology has in him sustained a loss that will not soon be replaced; for probably no one has done more, by pen and pencil, to advance the study of European Hemiptera. We believe that, for many years, he was occupied on a general work on the Homoptera, and we fully second Dr. Puton's remark that it is much to be desired that some editor, capable of the

task, should publish the manuscripts he has left behind him: this desire, we are sure, will be felt by English Hemipterists, who have so largely benefited by Dr. Fieber's opinions and assistance.

ENTOMOLOGICAL SOCIETY OF LONDON, 19th February, 1872. — Prof. J. O. WESTWOOD, M.A., F.L.S., President, in the Chair.

The following gentlemen were elected Subscribers to the Society:—Dr. Ransom, F.R.S., of Nottingham; H. W. Livett, Esq., M.D., of Wells; J. H. A. Jenner, Esq., of Lewes; and G. B. Rothera, Esq., of Nottingham.

Mr. F. Smith called attention to the fact that mice are in the habit of devouring the dead pupæ of *Bombyx mori* contained in what is known as 'silk-waste.' Among a parcel of this 'waste,' he had found a double cocoon containing two pupæ, and evidently constructed by two larvæ working in concert. Mr. Weir called attention to similar cocoons of *Eriogaster lanestris*.

Mr. Butler exhibited dried specimens, and drawings, of an enormous parasitic larva, apparently pertaining to some species of *Ichneumonidæ*, that had emerged from larvæ of *Pygæa bucephala*, which they nearly equalled in size: he had failed to rear the perfect insect.

Dr. Buchanan White communicated extracts from his note book relating to the habits of ants as observed by him at Capri, in June, 1866, and bearing upon Mr. Moggridge's statement as to the storing of grain by ants at Mentone (see Proceedings for 1st January). Dr. White saw the ants cutting a long pathway through the grass, and conveying into their nest various seeds and pods. Mr. Horne stated that he had noticed a precisely similar habit in some of the ants of the plains of India, from the nests of which he was sometimes able to collect several handsfull of seeds.

Prof. Westwood exhibited type specimens and magnified drawings of the creatures upon which Latreille had founded his Crustaceous genus *Prosopistoma*, and again referred to the opinion of Dr. Joly, that these animals, and "le Binocle" of Geoffroy, are immature conditions of *Ephemeridæ*. The absence of mouth-organs, and several points of structure, did not accord with the relationship assigned to them by Dr. Joly; at the same time, the legs were totally unlike those of any *Crustacea* known to him. In external form they bore some resemblance to the pupæ of *Bætica obesa*, one of the *Ephemeridæ*, as figured by Walsh.

Mr. McLachlan was of opinion that the structure of *Prosopistoma* was opposed to the idea of its pertaining to the *Ephemeridæ*. He exhibited specimens of the recently described *Boreus californicus*, Packard, from California.

Mr. Müller read a note from Mr. P. Cameron, Jun., of Glasgow, in which the latter asserted that gall-making saw-flies avoid those parts of willow trees that overhang water, as inimical to the descent of the larvæ for the purposes of pupation in the earth. A similar fact had been recorded by Osten-Sacken with regard to the American plum-weevil. Mr. Müller suggested that this habit in insects might be turned to practical account as a means of preserving choice fruit trees from their attacks, and suggested the use of glass, it being well known that water-beetles often mistook glass for water. Prof. Westwood said he had known the glass in a frame to be broken by a *Dytiscus* flying against it.

4th March, 1872.—The President in the Chair.

Ernest Kaye, Esq., of Penge, was elected a Member.

Prof. Westwood exhibited living examples of *Argas reflexus*, from the crypt of Canterbury Cathedral, which species he had noticed at the Meeting on the 5th ultimo. Also another species of the same genus collected by Dr. Livingstone in Central Africa, where it annoyed the natives by entering the feet between the toes, causing pain and inflammation.

Mr. S. Stevens exhibited an apparently undescribed species of *Phycita*, from the neighbourhood of Gravesend, remarkable for its pearly hue and *Crambus*-like form.

Mr. F. Smith stated that he had received a further communication from Mr. Moggridge regarding the grain-storing ants at Mentone. Mr. Moggridge had confined a colony of ants in a glass vessel for purposes of observation, and he was now able to state positively that they fed upon the stored grain.

Mr. H. W. Bates exhibited a series of British species of *Carabus* side by side with their nearest allies from Eastern Siberia. He stated that of fifty species of *Carabus* inhabiting the latter country, one only (*C. granulatus*) was found also in Western Europe. He recalled the attention of the Society to the zoological division of the globe into regions as proposed by Sclater, and urged that the Palæarctic Region (including Europe and Northern Asia) was not a natural one, in so far as its Insect-fauna was concerned, however much it might be so as regards Mammals and Birds. Neither was there the difference between the Insect-fauna of the Nearctic (North American) Region and that of the Palæarctic, that seemed to be assumed when the division was made: on the contrary, there was much resemblance between the insects of Eastern Siberia and those of Western America. He considered an investigation as to the districts that presented the most peculiar forms as more philosophical for purposes of division. Prof. Westwood followed by pointing out the necessity for ascertaining the range of each species, and the variation or modification it presents in different districts. Dr. Sharp said that the Spanish *Carabi* were mostly peculiar to the Iberian peninsula, and that those species occurring both there and in other parts of Europe were modified. He also stated that the Siberian species of *Oxytelus* were all identical with those of Britain, whereas the *Bledii* were all different.

Mr. Müller exhibited a leaf of *Cinnamomum nitida*, from Bombay, bearing galls which he referred to the productions of an *Acarus* of the genus *Phytoptus*, thus showing the occurrence of this genus in India.

Mr. Baly communicated descriptions of new species of exotic *Cassididæ*.

Mr. Kirby communicated notes on the Diurnal *Lepidoptera* described by Jablonsky and Herbst.

Mr. Dunning read an exhaustive paper on the genus *Acentropus*, in which he gave a résumé of all that had been written on the subject. He was of opinion that the genus was undoubtedly Lepidopterous, and that probably one species only existed, for which he retained the name of *Acentropus niveus*. In his introductory remarks, he commented strongly upon reasons recently given for ejecting it from the *Lepidoptera*, as opposed to the opinions of all who had studied the subject, which opinions were borne out by his own investigations. He placed *Acentropus* in the vicinity of the *Crambidæ* and *Chilonidæ*.

ON THE SPECIES OF *EMPIS* ALLIED TO *E. STERCOREA*, LINN.
(INCLUDING ONE NEW TO SCIENCE).

BY G. H. VERRALL.

These species of *Empis* are well distinguished by their yellow colour, elongate form, long, thin, bare legs, long antennæ (especially the basal joint), and by the eyes of the male being widely separated.

In the 'Berliner entomologische Zeitschrift,' xi (1867), p. 11—21, Loew has revised the European species and described ten, adding another at page 158, and a twelfth at xiii, p. 82; of these twelve, six were new or undistinguished, and Loew says that he doubts not, but that there are many other rare species which are overlooked, from the very great abundance of the common species allied to them. He describes—

stercorea, Linn.

stigma, Mg.

dimidiata, Lw.

univittata, Lw.

stercorea, var. b, Zett.

læta, Lw.

æqualis, Lw.

bilineata, Lw.

punctata, F.

testacea, Zett.

testacea, F.

punctata, Mg.

ignota, Mg.

semicinerea, Lw.

trigramma, Mg.

lutea, Mg.

nana, Lw.

Closely allied to this group come a few other species distinguished by their shorter antennæ, and (except in *scutellata*, Curt.) by the eyes of the male touching on the *front*; of these I shall only notice *scutellata*.

I have hitherto found in Britain only *stercorea*, *punctata*, *trigramma*, *lutea*, *scutellata*, and an undescribed species allied to *lutea*, which I have called *concolor*. Concerning these, I have the following remarks to make.

1. *Stercorea*, which extends over middle and northern Europe, is distinguished from the other British species by the single distinct black line down the thorax, and its generally larger size; *scutellata* has only one line on the thorax, but has the basal joints of the antennæ shorter and yellow: of the European species, *dimidiata*, from southern Germany, is very much allied, but the prothoracic stigma is concolorous with the thorax, instead of black, the thorax

is duller, and the lateral lamellæ of the hypopygium are broader and obtuse, instead of acute; *univittata*, from middle and northern Europe, is smaller, the thoracic line is twice as broad, the occiput is nearly all black, instead of only slightly so, the prothoracic stigma is pale, the lateral lamellæ of the hypopygium are smaller, more acute, and black at the tip, and the upper lamella is blacker, more pilose, and bears on each side a small black, hairy process: *læta* has long black hairs on the under-side of the tibiæ, &c.

I have captured *stercorea* at Rannoch and Aberlady, and imagine it must be found in many places, from the frequency with which it occurs in collections.

2. *Punctata*, which is found all over Europe, has the disc of the thorax obscurely greyish, with three somewhat indistinct black lines, the front and the occiput nearly all blackish, the pleuræ just above the posterior coxæ with grey spots, the lateral lamellæ of the hypopygium long, acute, black at the tip and fringed with black hairs, the upper lamella with its upper margin black, and each angle produced into a black lobe: *semicinerea*, from the mountain regions of Germany, has the thorax still blacker, the sides even being grey, the lateral lamellæ of the hypopygium obtuse, the upper one simple, with its upper margin brownish: *testacea*, from Austria, is larger, with the abdomen and hypopygium all yellow, besides other differences: *æqualis*, from Germany, is smaller, and has yellow lines on the thorax, and a pale-haired differently shaped hypopygium: *bilineata*, from middle and northern Europe, also has a pale-haired differently shaped hypopygium, and has remarkably few and short bristly hairs on the thorax; both *æqualis* and *bilineata* have only a moderate-sized black spot on the occiput, and have scarcely any black line on the sides of the abdomen: *bilineata* has also yellow lines on the thorax and a differently shaped hypopygium.

I have found *punctata* in abundance near Darenth Wood and at Rannoch, and therefore suppose it to be distributed all over Britain.

3. *Trigramma*, from middle and northern Europe, is allied to *punctata*, but has narrow yellow lines on the thorax between the black lines, the lateral lamellæ of the hypopygium rather acute, the upper one simple, large; the whole of the hypopygium being bent back over the abdomen more than usual; the penis is exceedingly long.

It is the most abundant species in England, and I also captured it commonly at Rannoch.

4. *Lutea*, from middle Europe, is yellow, with only the antennæ, the ocellar spot, the margin of the upper lamella of the hypopygium and the tarsi, black; the lateral lamellæ of the hypopygium are produced into a very long, obliquely descending cone, fringed with long black hairs; the upper lamella is almost simple, and the slight pubescence seems pale; the female is much more bristly on the disc of the hinder half of the thorax than any other species of the group: *concolor* is darker, and has a differently shaped hypopygium.

I have never found *lutea* in abundance, but have caught it in various localities in the south of England, and one female specimen, in company with *concolor*, at Aberlady.

5. *Concolor*, n. sp.; ♂ ♀.

Lutea, *antennis maculâque occipitali nigris; hypopygii lamellæ laterales simplices, superior appendicibus duabus nigris; femine thorax pilos perpaucos gerens.*

Long. corp. $2\frac{3}{4}$ — $3\frac{1}{4}$ lin. *Long. al.* 3 — $3\frac{1}{2}$ lin.

This species is allied to *lutea*, but is larger, more luteous; the occiput bears a moderately large black spot, frequently covering all the space just behind the eyes, and, in the only female I possess, covering the whole of the occiput, the *front* and face are frequently dark luteous with pale tomentum, the tarsi and extreme tips of the tibiæ are generally blackish, the wings are distinctly tinged with luteous; the lateral lamellæ of the hypopygium are rather short, simple, fringed at their tips with shortish black hairs, the upper lamella is small, with its angles produced into black lobes, clothed with short black hairs; the thorax of the female has no trace of the numerous black bristly hairs which are so conspicuous in *lutea*, ♀, but is almost without hairs at all, the incisures of its abdomen, and a peculiar dorsal line are blackish, this line is broad at the base of each segment, becoming very narrow at the end of the segment; the antennæ are quite black, while in *lutea* the second joint generally shows traces of yellow. Loew's *nana*, from Styria and Carinthia, seems to have the upper lamella of the hypopygium somewhat similar, but even more divided, and the lateral lamellæ more complex; it is also considerably smaller (*long. corp.* $1\frac{7}{12}$ — $2\frac{1}{4}$ lin.), and instead of the occiput, it has the front blackish, with pale tomentum.

I captured three males and a female of this species at Aberlady, on June 30, 1870, by sweeping in a wood near the coast, nearly a mile from Aberlady, on the road to the Railway Station. In company with it, I caught one female *lutea*.

I think it very probable that the solitary female from which the above description was drawn up is darker than usual on the occiput and abdomen. Although the measurements given would make this species nearly as large as *stercorea*, yet in appearance it only slightly exceeds *lutea*, as it is not so robustly built.

6. *Scutellata*. I have revived this name of Curtis for the species described in 1860 by Egger, under the name of *parvula*, in the 'Verhandl. der k. k. zool-bot. Gesellschaft,' x, p. 343, as I consider Curtis's description amply sufficient to recognise the species; his description is as follows:—"Ochreous; antennæ, excepting the "two basal joints, fuscous, crown of head and post-scutellum slate "colour; thorax bright ochre, with a very narrow black line down "the back; tarsi yellowish-fuscous, dark at the extremity; wings "nearly colourless: $2\frac{1}{3}$ lines.

"I took a pair in Coombe Wood the 4th of June."

I have never taken this species myself, but have seen several which belonged to the late Mr. J. C. Dale, who kindly gave me a pair.

The short, pale basal joints of the antennæ, and narrow thoracic line, distinguish it from the other British species, nor is there any recognised European species with these characters in which the eyes of the male do not touch. Its synonymy, as far as I can work it out, will be the following:—

Empis scutellata, Curt., B. E., 18, 12 (1824).

testacea, Wlk., Ins. Brit., Dipt., i, 96 (1851).

parvula, Egger, Verh. z. b. Ges., x, 343 (1860); Schiner, Faun. Austr., Dipt., i, 107 (1862); Lw., Berl. ent. Zeits., xi, 18 and 21 (1867).

Of Curtis's other species described at the same place, *stercorea* and *lutea* seem correctly named; *ochracea* is *lutea*; *dorsalis* and *testacea* are *punctata*, Mg. (Lw.); *ignota* and *punctata* are probably *trigramma*.

Walker's other species are correctly named, excepting that *ignota*, Mg., is now called *punctata*, Mg.

The Mulberries, Denmark Hill, S.E. :

March, 1872.

NOTES ON CICINDELIDÆ AND CARABIDÆ, AND DESCRIPTIONS OF
NEW SPECIES (No. 15).

BY H. W. BATES, F. L. S.

ODONTOCHEILA VERMICULATA, n. sp.

O. eximia (Lucas) proxime affinis, at multo major et magis robusta; suprà nigra, sericeo-nitida, subtus pedibusque nigro-cyaneis, capite dense strigoso, occipite medio solum crebre punctato; labro et palpis omnino nigris; mandibulis nigris, basi exteriori testaceo-vittato; thorace medio leviter rotundato-dilatato, suprà crebre et distincte transversim strigoso; elytris valde inequalibus, impressione magna prope humeros, altera discoidali, alterisque duobus juxta apicem, basi et apice grosse subrugoso-punctatis, medio vermiculato-rugatis, nigris, vix cupreo- et certo sitâ cyaneo-micantibus, guttis albis marginalibus duobus parvis, humerali deficienti; pedibus et precipue tarsis quam in *O. eximia* robustioribus, tarsorum posteriorum sulcis vix impressis.

Long. $5\frac{1}{2}$ —6 lin. ♂.

Taken sparingly in the Macas district, Equador, by Mr. Buckley.

ODONTOCHEILA IODOPLEURA, n. sp.

Ab *O. mexicana* differt elytris creberrime ruguloso-punctatis. *O. marginoguttata* vere affinis, at capite postice magis angustato et thorace angustiori; capite obscure viridi, fronte cupreo-variegato, strigoso; labro nigro (basi excepto), testaceo-marginato; palpis testaceis, maxillarium articulis duobus ultimis, labialium articulo apicali, piceis; thorace angusto, medio leviter rotundato-dilatato, suprà transversim crebre undulatim strigoso, late rubro-cupreo, sulcis fundo viridibus; elytris suprà equalibus, vitta lata suturali purpureo-cuprea, altera exteriori viridi-ænea, tertiarque marginali violacea, utroque serâ guttis tribus marginalibus distinctis sub-triangularibus; corpore subtus cyaneo; pedibus violaceo-piceis; femorum dimidio basali trochanteribusque albo-testaceis; antennarum articulis 4 basalibus purpureo-cupreis.

Long. $4\frac{1}{2}$ —5 lin. ♂ ♀.

Chontales, Nicaragua; sent home by Mr. Thos. Belt.

THERATES CALIGATUS, n. sp.

Th. coracino similis, at multo minor, angustior, tibiis tarsisque nigris, etc. Nigro-violaceus vel nigro-cyaneus; capite valde ab affinis diverso, pone oculos citius et rectius angustato, genis infra oculos vix tumidis; tubere frontali ut in *Th. coracino* magno, sulcis inter oculos vagis, vix distinctis; thoracis parte mediana valde transversa, rotundata; elytris ad apicem breviter (♂ sinuatim) truncatis, angulis prominulis, suprà in depressionibus sparsim punctatis et lateribus punctulatis; antennarum articulo 1^{mo} pallide testaceo; palpis testaceis, maxillarium articulis duobus ultimis, labialium articulo apicali, piceo-nigris; pedibus piceo-nigris, coris, trochanteribus, femoribus (et abdomine) rufo-testaceis; labro ut in *Th. coracino* prope apicem tumido.

Long. $6\frac{1}{2}$ lin. ♂ ♀.

Philippines, probably Mindanao; many examples. In the same small collection were *Th. coracinus*, *fulvipennis*, *Semperi*, *vigilax* (*flavilabris*, F. ? a Mindanao form), and the following exquisite new species.

THERATES BELLULUS, n. sp.

Parvus, capite (cum oculis) elytris multo latiori, elytrorum apice juxta suturam vix sinuato, angulo exteriori nullo, suturali modice producto, dentiformi; fulvus, nitidus, capite mox pone oculos abrupte angustato, nigro, tubere frontali valido, suprà transversim striato, fulvo; vertice inter oculos longitudinaliter striato; labro elongato, convexitate suprà recta, apice abrupte deflexo, fulvo, genis nullo modo tumidis; thorace ut in Th. Chaudoiri angusto, medio fortiter rotundato; elytris omnino sparsim (in depressionibus densius) punctatis, vitta brevi suturali juxta basin, fasciæque angusta paulo obliqua pone medium, a sutura longe remota, nigris; antennis piceis, articulis 2 basalibus 3ⁱⁱ 4^{ti}que apicibus fulvis; tarsis anticis nigris.

Long. 4 lin. ♂.

Philippines; one example.

DROMICA (MYRMECOPTERA) POLYHIRMÖIDES, n. sp.

Nigro-cyanea, nuda, elytris leviter cupreo-tinctis, vitta utrinque haud procul a sutura paulo obliqua, a basi usque ad prope medium extensa, maculaque communi elongato-ovata ad apicem albo-testaceis; capite post oculos elongato, leviter angustato, cum thorace (angusto, cylindrico) passim eleganter dense acute (hoc transversim) strigosis, labro nigerrimo, macula ovata mediana albo-testacea; elytris absque humeris, a basi thoracis usque ad longe ultra medium gradatim modice dilatatis, apice ad suturam spinis longis validis instructo, suprà lineis 5 angustis elevatis, ante apicem desinentibus, lineis transversis creberrimis interstitialibus conjunctis; palpis flavis, maxillarium articulis duobus ultimis, labialium articulo apicali, nigris; corpore subtus, pedibus et antennis nigris, his articulis 5—10 dilatato-compressis.

Long. 9 lin. Lat. max. elytr. 2½ lin. ♂.

The pale spot at the apex, and the basal vitta, are not formed of pubescence as in the *Polyhirmæ*, which this species so wonderfully mimics, but are colours of the integument.

Region of the Middle Limpopo, S. E. Africa; taken by the celebrated traveller Karl Mauch.

DROMICA (MYRMECOPTERA) MAUCHII, n. sp.

E maximis. Suprà nigra, opaca, thorace medio vitta interrupta cano-tomentosa, elytris vitta utrinque brevissima obliqua basali, maculaque elongata marginali ante apicem fulvo-testaceis; capite suprà passim acute (vertice undulatim), strigoso, pone oculos elongato et modice angustato; labro nigerrimo, vitta mediana flava; thorace longato, sub-cylindrico, antice paulo latiori et paululum rotundato, disco utrinque oblique undulatim strigoso, lateribus acute elevato-marginatis; elytris elongato-obovatis, humeris nullis, usque ad paulo post medium gradatim dilatatis, deinde citius angustatis, apice obtusis, angulis suturalibus breviter dentatis, suprà lineis angustis elevatis utrinque 5 ante apicem desinentibus, interstitiis et apice creberrimo profunde punctatis; corpore subtiliusque nigris nitidis; antennis nigris articulis 5—8 maxime (9—11 minus) dilatato-compressis.

Long. $11\frac{1}{2}$ lin. Lat. max. elytr. $3\frac{1}{8}$ lin. ♀.

Region of the Middle Limpopo. This magnificent species, quite unlike any other known, is dedicated to its discoverer, Karl Mauch.

CICINDELA COMPRESSICORNIS, Bohem., Ofvers.Vet. Ac. Förh., 1860, p. 4.

Herr Mauch also sent home a specimen of this beautiful species. It is a male, and probably belongs to the genus *Bostrichophorus*, although the labrum has only three teeth and the tarsi have no trace of grooves. These characters differ from those given by Chaudoir as those of *Bostrichophorus*, and drawn up from the female only; but it is possible they are sexual.

OXYGONIA; supplementary note.—Since the account given at pp. 237-42 appeared, I have detected another published species of this genus, in Thomson's 'Arcana Naturæ,' p. 91, under the name of *Phyllodroma Delia*. The ♂ only is described, and, if the colours are correctly given, it differs from all the species published by me, the only doubt being as to its identity with Erichson's *O. prodiga*. It is 15 mm. in length, above of a metallic green, "becoming purple on the sides of the head, thorax and elytra." The labrum is black, with two white spots (as in *O. gloriola* and *floridula*). Beneath it is of a "purple-red." The elytra have each three lateral, white spots, the hindmost of which is the largest, and oblique; and the punctuation resembles the species above cited in being irregular, with smooth and deeply punctured spaces. "Interior of Peru."

Note on Meloë cyaneus, Muls.—I have at present a pair of a *Meloë* which appear to agree with Mr. Rye's description (*ante*, p. 248) of a specimen found in the Isle of Man. I have taken one or two of this species or variety for several years consecutively, but could never feel satisfied to attribute them to *proscarabeus*: they are smaller, more glossy, not so black, and (some more than others) have a greenish or 'bronze' tinge, principally about the head and thorax. In the ♀ of the above-mentioned pair, the entire abdomen is slightly bronzed, as well as the head and thorax. I have always found these individuals feeding on grass, but they will also eat the common *Arum* leaves.—CHAS. G. ROTHERHAM-WEBSDALE, 78, High Street, Barnstaple: *March 22nd*, 1872.

Note on Meloë cyaneus, Muls.—Since the publication of my note on the subject of this insect (*ante*, p. 248), the Rev. R. P. Murray has very kindly forwarded to me a small congregation of oil-beetles (upwards of a score in number) just taken by him in the Isle of Man. An examination of these specimens convinces me that the doubts before referred to by me, as to the validity of the claim of Mulsant's *cyaneus* to be considered specifically distinct from *proscarabeus*, were well founded; as in this little family I find two examples at least with the head and thorax as comparatively free from punctures, and as glossy, blue, and shining, as those of the individual first recorded by me; and, although there is not an uninterrupted chain of specimens intermediate between these and such of the others as are certainly not separable from the most typical *proscarabeus*, yet the variations as regards size, colour, granulation of elytra, and punctuation of the head and thorax are so great, including so close an approach to the special peculiarities in the latter respect, that I have no doubt but that all must be considered as different states of the same species,—the extreme of which is apparently much more aberrant from the type than Mulsant's *cyaneus*. The longitudinal dorsal thoracic channel becomes imperceptibly modified to an isolated depression, often accompanied by two discal and almost circular depressions; and there is sometimes a faint transverse basal depression, simulating that of *violaceus*. Mr. Rotherham-Websdale's specimens above mentioned (courteously forwarded to me by him) are specially interesting, as having a semi-cupreous tinge over the whole of the body: they are about equal to the Manx *intermediate* specimens, as regards punctuation of head and thorax.—E. C. RYE, 10, Lower Park Field, Putney: *April*, 1872.

Note on Meligethes pictus, Rye.—Since the publication of my remarks on this species (*ante*, p. 269), my friend Mr. R. Lawson has communicated to me a few specimens of it from Scarborough entirely free from spots on the elytra. These are the first immaculate individuals of the species that have come under my observation, and were not before sent because they happen to be not quite perfect.—ID.

Note on a deformed antenna in Hydroporus obsoletus, Aubé.—Among some specimens of this local insect recently taken by me here, is one exhibiting the following abnormal structure: its right antenna has the four basal joints almost as usual in the species, only rather thicker and more compressed; the 5th joint is compressed, obconic, formed apparently of two aborted joints, anchylosed laterally for more than their lower half, and the right-hand one of which gives off a palpiiform

appendage of three longer joints. From the left-hand of these two aborted joints, and apparently in continuation of the main body of the antenna, a bifurcate appendage proceeds, composed as follows: the normal 6th and 7th joints are much increased in width and almost entirely amalgamated, the 7th being apparently formed of two aborted and laterally ankylosed joints similar to (but larger than) those representing the 5th joint, and giving off on its left two joints similar to those proceeding from the right of the 5th joint, and on its right, evidently forming the true completion of the antenna, four joints, rather shorter and wider than the usual apical articulations, but with the apical joint itself not so wide in the middle or so large as the apical joints of the two supplementary appendages. In other respects the individual seems of the normal structure.—R. LAWSON, 58, St. Thomas Street, Scarborough: *April*, 1872.

Tachyporus nitidicollis in a midland County.—I took this handsome form of the common *T. obtusus* at Sherwood, in 1871, having formerly only observed it at Killarney.—J. R. HARDY, 118, Embden Street, Hulme, Manchester: *Feb.*, 1872.

Captures of Coleoptera in the Manchester district during the past winter.—A remarkably mild and sunny day in the third week of January tempted Mr. Morley and me to set out with the intention of visiting our favourite hunting ground, Drinkwater Park, where we had taken in December *Choleva spadicæa* and *Agathidium rotundatum* and *convexum*, in addition to other species previously recorded from that place; but on this occasion we were tempted to try a haystack on the way, and were well satisfied with the result, as beetles were so numerous and lively that in the course of an hour or so our bags were full, and we were returning home to examine their contents. Amongst them, we were pleased to observe for the first time *Acidota cruentata*, leisurely walking off the paper, *Homalium Allardii*, *H. ocyacanthæ*, *Cryptophagus setulosus*, *sagrinatus*, *affinis* and *distinguendus*, *Ptinus crenatus*, and many of the usual haystack species.

Afterwards, in the corner of a low swampy meadow, at the foot of a plantation adjoining the late Aspinall Turner's Estate, on sifting dead leaves, we were surprised to see *Gymnusa variegata* in numbers, accompanied by its brother *brevicollis*, in no hurry to get away, as the day was dull and frosty: among the dead leaves we also found *Bythinus puncticollis*, *Ocyusa maura*, *Homalota insecta* (*sulcifrons*, Wat. Cat.), *occulta*, with a dark-legged variety, *fusco-femorata*, *divisa*, *Thomsoni*, *angusticollis*, *autumnalis*, *villosula*, *sordidula*, and the north country *eremita*, *Encephalus complicans*, *Gyrophæna nana*, *Homalium exiguum*, *Agathidium nigrinum*, *Phyllotreta tetrastigma*, &c. Lower down, under the decayed and frozen reeds, eighteen species of *Stenus* occurred to us, the majority in the greatest abundance, including *cicindeloides* (not previously observed by us in this district) and a few *opacus*, *Tachysa atra*, and *Anchomenus gracilis*, including an interesting var. with short antennæ (this species emits a very disagreeable odour when captured). Cutting tufts yielded, amongst other things, more *Gymnusa*, which by the way has been taken by other Manchester collectors in the same manner in winter.

On reaching home we found in the bag *Bolitobius inclinans*,—a nimble-footed creature that would never allow itself to be so easily captured in warm weather.—W. BROADHURST, 46, Ellor Street, Pendleton, Manchester: *March*, 1872.

Capture of Pentatoma juniperina, Lin., &c.—Yesterday, I went to Caterham Junction, to hunt for *Scirius dubius* in the moss which grows under the juniper bushes; and did not get it. But I found a more welcome species, *Pentatoma*

juniperina, one of the scarcest and prettiest of the British *Hemiptera*, for which I had often sought in vain, and which I certainly did not expect to meet at this season, seeing that the time of its appearance is given as July and August. It would seem, therefore, that it is a hibernating species.

I also obtained *Eremocoris erraticus* (3), not a common species. *Peritrechus luniger* was abundant, in fact, the most numerous species; while of *Drymus sylvaticus*, usually a nuisance, I saw but two.—J. W. DOUGLAS, Lee: 17th March, 1872.

Query as to the effect of temperature upon the development of butterflies.—I am anxious to find out—for a work on which I am at present engaged—what relation temperature has to the distribution of *Lepidoptera*, and should be exceedingly obliged to anyone who “breeds” extensively, if he will note for me the lowest temperature at which the ova hatch, and at which the imago is disclosed, in various species. I should be glad to know these particulars as regards any species, but more especially in the following butterflies:—*Thecla quercus*, *Vanessa Io*, *Pararge Egeria* and *Megara*, *Lycæna Agestis* and *Artaxerxes*, *Colias Edusa*, *Pamphila Sylvanus* and *Nemobius Lucina*. Of course, the temperature noted must be that of the box in which the ova or pupæ are.—F. BUCHANAN WHITE, Perth: April, 1872.

On the habits of Eupithecia subciliata.—English Entomologists imagine that the larva feeds upon maple. According to an old note, the larva was found on the 30th March, 1852, on oak; but whether in the buds or otherwise, is not stated. As the allied *tenuiata* is also found at that time of year, the statement carries with it much probability.—C. DIETZE (in the “Stettiner entomologische Zeitung,” 1871, p. 210).

[We incline to the opinion that the English Entomologists are right nevertheless, and that the larva of this species is in some way connected with *Acer campestre*. Herr Dietze finds 53 species of *Eupithecia* in the neighbourhood of Frankfurt-on-the-Main and Wiesbaden.—Eds.]

Note on the food-plant of Anerastia Farrelli.—I hear that Dr. Schleich is breeding this insect by scores. He had noted a sandy locality where the larvæ were feeding on *Anthyllis vulneraria*, and in the winter obtained hundreds of the hibernating larvæ in their sand-balls, by simply passing the sand through a sieve. In the spring, the larvæ quit their sand-balls to crawl about and seek a snug corner for pupation, and either form elongate cocoons in the sand, or spin up in a corner of the box in which they are confined. This insect, originally taken near Yarmouth, in Norfolk, has since occurred in Belgium, in Pomerania, and also on our own coast at Deal. It probably may be found wherever the *Anthyllis* grows on sand-hills.—H. T. STANTON, Mountsfield, Lewisham, April 10th, 1872.

On the relation between generic and specific names.—Owing, I will suppose, to the brevity of my note on this subject at p. 254 of this Magazine, I appear to have failed in conveying to Mr. Dunning (and so probably to others) the meaning I had intended to express, and will therefore say a little more on the subject.

The main point I wish to establish is this, that the specific or trivial name is, according to the laws of ordinary language, a noun; and that, therefore, it is quite unnecessary it should be changed in gender, when moved from a masculine-named to a feminine-named genus.

It is clear, according to the laws regulating the formation of language, that the question whether a given word is a noun, adjective, or verb, depends not upon the source from which it is derived, but the use to which it is put. I am not

sure whether Mr. Dunning appreciates this distinction or not, for he quotes (though apparently only with partial approbation) the Dresden Congress of 1858 to the contrary.

It is equally clear, that, if use and not derivation determine the part of speech of a word, all specific names must be of the same part of speech, for they are all put to the same (*i. e.*, an equivalent) use.

There cannot be any question of a specific name being a verb or preposition, or, in short, anything but a noun or adjective.

The question under discussion then seems to me to be whether all specific names are nouns or adjectives.

What, then, is in language the distinction between noun and adjective?

The distinction between the two is, to a great extent, that between the objective and the subjective, and the ordinary definition is, that an object is a noun, and that a quality or condition is an adjective.

It seems to me beyond doubt that the specific name is that of an object, and therefore is a noun.

This conclusion seems to me to be irresistible, from a logical point of view, and almost as strong from a practical point of view.

The habit alluded to by Mr. Dunning, of using the specific name without the generic name, illustrates this: when a man says he has taken "*littoralis*," it is pretty clear he must refer to an object (even if the particular object be uncertain), for the capture of a bottleful of adjectives would not be more conceivable, than of a bag full of moonshine.

Mr. Dunning says that "*niger*," when used as a specific name, does not "indicate a certain definite object (*i. e.*, is not a noun)"; and he attempts to enforce this by asking whether it indicates *Gobius niger* or *Hyoscyamus niger*. But this is entirely beside the mark. Is "Turkey" not a noun, because, when written without context, I do not know whether it refers to a bird or to a country?

Again, Mr. Dunning says that the generic and specific names together constitute the name. This is quite true; but, unfortunately, does not assist us in arriving at any conclusion as to how we shall treat the two when temporarily sundered; this being just the very point under discussion. The specific name having to be divorced from the generic name for certain purposes, how shall we treat it on its own merits? I answer, always as a noun—and as a particular instance mention that it is no more necessary to change the masculine *Minimus* to the feminine *Minima* when moving it from a masculine-named genus to a feminine-named genus, than it is to change the masculine name *Adonis* for a feminine name when it undergoes a similar transmigration. The conclusion is based upon the hypothesis that, as names of species, *Minimus* and *Adonis* are the same part of speech, and I have been induced to put forward my reasons for so thinking, because I consider that this conclusion, if adopted, will help, if only a little, to that "consummation most devoutly to be wished," a zoological nomenclature free as a whole, and in its separate parts, from reasons for changing it.—D. SHARP, Eccles, Thornhill, Dumfries: April 2nd, 1872.

[As the discussion of this subject need not apparently be continued beyond the usual answer to a rejoinder, and should, at all events, be completed in the volume in which it was commenced, we have departed from our usual course, by allowing Mr. Dunning a perusal of Dr. Sharp's remarks before printing them.—Ens.]

On the relation between generic and specific names.—Dr. Sharp's meaning was clearly enough expressed in his former communication, and, if I have failed to shew that his view is erroneous, it was not from any want of perspicuity on his part.

The main argument on the former occasion was, that the specific name is the real basis of zoological nomenclature, and that the generic name was a secondary affair, much more adjectival than the specific name. To this argument I addressed myself, and endeavoured to shew that the generic name is the primary, and the specific the secondary name.

I accept Dr. Sharp's statement of the question under discussion—Are all specific names nouns, or are they all adjectives?

He thinks it beyond doubt that every specific name is a noun. And the reason he gives for his belief is, that the specific name is the name of an object.

My answer was, and is, that the specific name is not the name of any object. The generic name is the name of the object, and is a noun substantive—as *Juniperus*, the juniper. But there are several junipers, and to distinguish between them, we must add something to the noun substantive; we put to the noun *Juniperus* the words *communis* and *nana*, and these adjectives (or words 'put to') are the specific names.

I beg to repeat my former enquiry. In the names of "the common juniper" and "the dwarf juniper," are *common* and *dwarf* nouns substantive or nouns adjective? If adjectives, are not *communis* and *nana* adjectives likewise?

If I may be allowed to cite my own words "Each genus has its name, which is a noun substantive; and the species is marked by the addition of some epithet to the name of the genus—by the addition of another word, which may be, but is not necessarily, a noun substantive; which in fact is more frequently an adjective; and which, when a substantive, is epithetic, or used adjectivally," or, I might have added, "figuratively."

Thus, when we give the specific name *taurus* to an *Onthophagus*, we do not mean that the beetle is a bull, but only that it possesses some quality which induces us to liken it to a bull, or to speak of it figuratively as a bull. And when we name a butterfly *Polyommatus Adonis*, we (by a well-known figure of speech) personify the beauty of the insect, and call it by the proper name of one who was remarkable for the possession of that same quality of beauty. And it is manifest that specific names which are the genitive or possessive case of a noun substantive, as *Anglicæ* or *Spinolæ*, are adjectival.

Taking then the term "adjective" as including words which in form are nouns, either in the nominative or genitive case, but which, like the instances mentioned, are used adjectivally, I think it beyond doubt that every specific name is an adjective.

As Wocke has it, "The name of the genus is the substantive, the name of the species is always an adjective, even though it express the name of a person or a place."

If every specific name were a substantive, then, since any substantive may (so far as language is concerned) be adopted for the name of a genus, it would follow that every specific name might be taken for the name of a genus. But would any one venture to propose *Anglicæ* or *Spinolæ* as the name of a new genus? And if not, why not?

Dr. Sharp appeals to the practice of using the specific without the generic name as an argument in favour of his contention. Holding the view I have indicated of the practice, he can scarcely expect this appeal to convince me, whatever effect it may have upon others. No doubt, when a man says he has caught "*littoralis*,"

he means to refer to an object; my complaint was, and is, that the reference is incomplete; it is precisely because he *does* tell me that he has captured a bottleful of adjectives, and nothing more, that I venture to protest; Dr. Sharp's answer to my protest is, in effect, that because the man meant to indicate something, therefore he must have done it,—because he meant to give some information, therefore he must have given it! It is as if I were told by a man that he had shot one "green," caught two "spotted," and plucked three "large:" and I suppose it is expected of me to believe, that the name of that man is *Sapiens*!

In the latter part of his note, Dr. Sharp says the point under discussion is, how to treat the generic and specific names when temporarily sundered; but, with submission, this is not the point under discussion. The point is, whether the specific name is an adjective or a substantive; whichever it is, it retains the same character whether it be joined with or temporarily sundered from the generic name—though my contention is that the two never ought to be sundered. Of course, a species may be transferred from one genus to another, and when so transferred the specific name goes with it. But what I mean is, that the specific name ought not to be treated as having a separate and independent existence; the moment it is severed from one generic name, it is or should be at the very same moment joined to another; I do not recognize such a thing as a specific name unattached; the question is not how to treat the specific name apart from the generic or how to treat the two when sundered, but how to treat them when united.

Dr. Sharp admits that the generic and specific appellations together constitute the name; and this is something gained, for in his former paper he seemed inclined to overlook this. In truth, the radical mistake (or what I conceive to be the radical mistake) which pervades the whole of his argument is this, that he loses sight of the distinguishing characteristic of the binominal system, and throughout regards the secondary or trivial name as if it were identical in character with the name, *i. e.*, the whole name, in a uninominal system. His contention is, *Niger* denotes a certain object, and is the name of a definite thing; and therefore it is a noun substantive. My contention is, that, according to the Linnean system of nomenclature, the trivial appellation *Niger* does not denote a certain object, and is not the name of anything.

Undoubtedly I denied Dr. Sharp's statement that *niger*, when used as a specific name, indicates a certain definite object; but my friend is in error in attributing to me the argument that *niger* is not a noun simply because there might be more than one object bearing that name. He enquires, Is Turkey not a noun because both a bird and a country are so called? Certainly, turkey is a noun. But is it a specific name? If not, the illustration fails. No doubt many objects may be called by the same name, which is none the less a noun on that account. And *Niger*, if chosen as a generic name (though the selection would, for obvious reasons, be an unhappy one), would doubtless be a noun, and none the less so, if there were two genera, each so called; though the name would not be retained for both, at least if both belonged to the Animal Kingdom.

As on the previous occasion, Dr. Sharp's last paragraph perplexes me; the *Adonis* passage is as bad as the "universal grammar." It passes my comprehension how the learned Doctor can gravely institute a comparison between changing *minimus* into *minima* to make it agree in gender with the generic name, and changing

the masculine proper name *Adonis* (used figuratively, as above explained) into a feminine name when it is removed from one genus into another. If the article had been anonymous, I should have attributed it to some one who had forgotten the advice of Cobbett, "Never write about any matter that you do not well understand." But the signature precludes such an idea, and the lengthy consideration I have given to the theory propounded by my friend is, I trust, sufficient proof of the respect I entertain for all he writes. The only conclusion I can come to is that the *Adonis* passage cannot be seriously intended; it must have been meant for a joke.

To conclude, specific names have from the introduction of the Linnean system down to the present day been universally regarded as adjectival, and certainly they were essentially so in the contemplation of the author of the system. Dr. Staudinger now proposes to consider them as proper names, apparently for no earthly reason but to afford a cover and cloak for the blunders of those, who are either too ignorant to know, or too careless to enquire, the proper gender of the generic names they use. "As long as the scientific names of plants and animals are to be Latin, we have a right to require that they do not sin against the simplest laws of that language" (Thorell, Nov. Act. Soc. Sci. Upsaliensis, ser. 3, vol. vii, p. 13). But now that Dr. Staudinger has obtained the support of Dr. Sharp, I suppose the nomenclature of Lepidoptera and Coleoptera will (to employ again the words of Thorell) "gradually assume an appearance absolutely disgusting to a person possessing even the slenderest classical attainments."—J. W. DUNNING, 24, Old Buildings, Lincoln's Inn: April 8th, 1872.

Obituary.

François Jules Pictet.—Early in March, Natural Science lost one of its most shining lights by the decease, at Geneva, of Professor Pictet (Pictet de la Rive) in his 63rd year. For many years past he had worked but little at Entomology, having devoted himself more exclusively to Palæontology, in which branch of study he had acquired a fame possibly eclipsing that earned by him as an entomologist in his younger days. He at first devoted himself almost entirely to *Neuroptera*, and his earliest published paper was written when only in his 23rd year, followed two years later by his well-known '*Recherches sur les Phryganides*,' a work which, even if he had stopped his investigations, would have stamped him as one of the most acute observers and anatomists Europe has produced. This work was succeeded by his masterly Monographs on the *Perlidae* and *Ephemeridae*, and by many shorter papers. For a list of his entomological works, we refer our readers to Hagen's '*Bibliotheca*,' from which the only omission we have detected is a '*Note sur les étnis de Phryganes envoyés de Brésil par M. Blanchet*,' published in the '*Bib. Univ.*, v, 1836, pp. 198—200, under the initials "F. J. P." Pictet's bent of mind no doubt attracted him more to investigations of habits and anatomy, than to subtle questions of specific differences, and, from this cause, the identification of his species is sometimes difficult, especially in his '*Phryganides*.' But, with few exceptions, most of the points in dispute have been satisfactorily settled: and it must be remembered that he worked before Rambur had opened up a new field in Neuropterology by his investigations of the sexual organs in those insects. Pictet belonged to one of the oldest and most wealthy of Swiss families, and devoted his life to the disinterested advancement of Natural History. But, by his

countrymen, he was not the less respected as a public man, and his native town of Geneva marked its sense of the loss it had sustained by a day of mourning for his decease. The illness which terminated so fatally was supposed to have been induced by a fall during a frost when he was attending some public conference at Berne. His death causes a vacancy in the List of Honorary Members of the Entomological Society. The father's earlier footsteps in the field of entomological science have been worthily followed by his son, A. E. Pictet, who, a few years since, published a valuable work on the *Neuroptera* of Spain; let us hope this may not be his last! And, as an entomologist, his reputation has been equalled, if not exceeded, by that of his well-known nephew, Henri de Saussure.

Charles Horne.—This gentleman died at his residence at Norwood on the 21st of March, in his 48th year. We are unable to give any particulars of his early life, but he passed many years in India in the Civil Service, and latterly in the capacity of judge. His extensive collections and notes were almost all destroyed during the Mutiny, and soon afterwards he retired from the service and settled in England, devoting himself to horticulture and natural-history pursuits. At the Meeting of the Entomological Society on the 18th ultimo, he took a prominent part in the discussion, and appeared in robust health; two days later he was seized with paralysis, when attending a Meeting of the Horticultural Society, and died next day. Mr. Horne's knowledge of the habits and economy of insects was very extensive, and a valuable paper by him on the habits of certain species of Indian *Hymenoptera* has recently been published in the Proceedings of the Zoological Society. Only a few days before his death, he had been elected a fellow of the Linnean Society.

Newcastle-on-Tyne Entomological Society.—This Society held its second Anniversary on Tuesday, the 13th February last, in the Curator's Room of the Natural History Society's Museum: W. MALING, Esq., President, in the Chair.

The Secretary read the report, which showed the Society to be in a prosperous state, a good balance having been left in the hands of the Treasurer, and several new books purchased during the year. The Society now numbers 36 (including three Honorary) Members.

Amongst other matters brought before the Members, was the publication of a local list at some future time.

After the election of officers, one new Member was elected.—J. HAMILTON, Secretary, 13, Union Street, Newcastle-on-Tyne: 20th February, 1872.

ENTOMOLOGICAL SOCIETY OF LONDON, 18th March, 1872.—F. SMITH, Esq., Vice-President, in the Chair.

R. Meldola, Esq., of Brentford, was elected a Member.

Mr. Higgins exhibited some beautiful species of *Cetoniide* from Java.

Mr. Bond exhibited an example of *Acronycta leporina*, one side of which had the typical colour and markings, the other side having those of the variety known as *bradyporina*, the two forms having been considered at one time as distinct species.

Mr. Smith said that the discussion at the last Meeting concerning Siberian

insects had induced him to examine specimens of the common hornet from Europe, Siberia, and North America, and he had found them absolutely specifically identical, even in the form of the genital organs.

Mr. Müller read notes on *Serropalpus striatus*, which he used to take near Basle in the neighbourhood of the timber-rafts, and stated that M. Knecht had taken 200 examples from pine-wood in Alsatia. In Switzerland it had also been obtained from alder. He considered its occurrence in a bundle of hose in Leicester (*cf.* Ent. Annual, 1872, p. 76) as purely accidental.

The Secretary read a long account of the ravages of Locusts in South Australia in December, 1871, as detailed in the 'South Australian Register' for January 2nd, 1872. The insects were described as appearing in swarms that darkened the air, eating everything in their way, and preyed upon by birds that accompanied them. The leaves of the castor-oil plant were extremely fatal to them, and larkspur was also inimical. The introduced thistle was left untouched. Mr. Horne related his experiences of the ravages of locusts in India, where they were preyed upon by every animal, including domestic cattle and man. The castor-oil plant had no effect upon the Indian species, but the leaves of the tamarind-tree acted as a powerful purgative upon them.

1st April, 1872.—Prof. J. O. WESTWOOD, M.A., F.L.S., President, in the Chair. The death of Prof. Pictet, one of the Honorary Members, was announced.

Prof. Westwood exhibited a large woody gall found on the ground under an oak (which Mr. Müller considered the production of *Cynips radialis*). He also alluded to the specific differences existing in the genital organs of various species of *Cynips*, and exhibited drawings of the same from microscopic examination. He further exhibited drawings of the antennæ of various species of Fleas, which showed remarkable differences of structure, and, in expressing his conviction that the *Aphaniptera* formed a distinct order, remarked that they were as nearly allied, in his opinion, to the *Colcoptera* as were the *Strepsiptera*. Finally, he exhibited drawings of a minute parasite, belonging to the genus *Coccophagus*, which had been bred by a correspondent from the *Coccus* so common on the rind of oranges: he remarked that now was the best time to obtain the male of *Coccus*, and especially of the species that infested espalier pear-trees.

Mr. Müller read notes on the habits of *Anaspis maculata*, which he had bred from woody excrescences in the trunks of birch.

Mr. Butler read additional notes on the *Pericopides*, referring especially to those recently described by Dr. Boisduval.

Mr. McLachlan read a paper on the external sexual organs of the genus *Acentropus*, in connection with the question of specific differences in the genus, and exhibited drawings of the apparatus, made under the microscope. After having detailed the slight differences existing in specimens from various parts of England and the Continent, he came to the conclusion that there were not sufficient characters in these organs alone to warrant the opinion of a multiplicity of species, especially if compared with the differences existing in allied species of *Neuroptera*; but he reserved an opinion on the remarkable discrepancies of alar development shown in both sexes, and especially in the females, from different localities.



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